DO ALL LITHUANIAN PUPILS HAVE EQUAL OPPORTUNITIES TO OBTAIN HIGH QUALITY SECONDARY EDUCATION?

Analysis based on national matura examination results in 2000

The study was commissioned by the Centre for Educational Studies
of the Open Society Fund Lithuania
Conducted by the National Examination Centre
Vilnius, 2000

Translation of studies supported by the World Bank

BASIC CONCLUSIONS

- Male graduates were more determined in selecting more than one state final examination[1] (37 per cent of them selected one state final examination, whereas 57 per cent of male graduates took three or more state final examinations).
- Selection of the state final examinations was very similar among male and female graduates, with the exception of the examination in physics, which was much more popular among male graduates (the latter made up 88 per cent of all who decided to take this exam).
- Male graduates produced better results in examinations in history, mathematics, chemistry. Statistically, no major differences among male and female graduates were traced in the results of the examinations in biology and physics.
- Comparison of the results in the history exam and state final examinations in 1999 and 2000 reveals the trend that the gap in the examination results between male and female graduates is increasing.
- All exercises for the state final examinations are prepared in the Lithuanian language. Key terms of the exercises are translated into Russian and Polish. Statistically, only results of the history and chemistry examinations are better among pupils who study in Lithuanian schools.
- Pupils coming from schools in cities and administrative centres of districts showed better results in the state final examinations than pupils studying in other schools.
- A very large number of small comprehensive schools remains the distinguishing feature of the Lithuanian education system (comparison of the statistical data of 1999 and 2000 shows that the number of large schools is even decreasing). The size of a school directly affects results of the state final examinations – pupils from small schools produce worse results than those who come from large schools.
- Graduates in gymnasiums achieved much better results in the state final examinations than pupils in comprehensive schools. Comparison of results of the history exam and state final examinations in 1999 and 2000, reveals that the gap in achievements between gymnasium pupils and other graduates remains the same.
- The share of gymnasium pupils varies in different regions: a third of the Lithuanian regions do not yet have gymnasiums at all. In the municipalities of Kazlu Ruda, district of Joniskis and district of Utena, more than a half of the graduates learned in gymnasiums in 2000.
- An average gymnasium pupil took more state final examinations (and achieved better results) in comparison with a graduate in a comprehensive school.
- In regions where less than 20 per cent of graduates attend gymnasiums, their results of the state final examinations are more distinctive in the region.
- Popularity of the state final examinations (in terms of the number of pupils who select these examinations) and their results considerably vary in different regions. No particular similarities between examination results in 1999 and 2000 could be established.
- The school factor greatly influences results of the state final examinations, i.e. results of a graduate largely depend on the school s/he attends.

[1] Secondary education examination which is administered and assessed centrally using a hundred-point scale

INTRODUCTION

The concept of equal opportunities is included into the goals of educational reforms in different countries, though interpretation of this concept varies, and its content has had different implications over time. In 1960, equal opportunities in education had to ensure the right for every pupil to get general education. Once the general compulsory education was made available to everyone, the focus was shifted to the problem of practical availability of secondary education (in particular, specific subjects or study programmes). When these challenges were met (either in practice or on paper), attention was centred on the education results, and equal opportunities had to ensure the practical possibility for pupils to achieve similar results, i.e. get similar marks for final examinations. Such an interpretation of equal opportunities was a comprehensive issue, because results of the final examinations at schools was and is further used for the selection of applicants to higher educational institutions. The concept of equal opportunities in the current educational system implies more than either availability of learning or achievement of uniform results. It deals with equal possibilities, irrespective of the sex of pupils, their social, religious background or other factors (e.g. geographical or administrative division, language used at school, etc), to get education at different schools and to develop one's capabilities in the best possible way.

This survey is based on the results of the secondary education examinations, therefore, recognizing the limited availability of data and limited capacities of the surveying officials, the problem of equal opportunities in education will mean the possibility for ALL Lithuanian pupils to receive school education and achieve similar results in the final secondary education examinations.

Experience and results of the state final examinations in history and mathematics which were first time held in 1999, were exposed to broad discussion not only among the educational officials. At the request of the Open Society Fund (OSF), an effort was made to view the results of the new examinations from the aspect of equal learning opportunities. Such a survey was directed to a visual presentation of information rather than finding supporting evidence for preliminary conclusions. This survey gave an impulse for wider discussions. The presentation of this survey was made not only in seminars organized by the OSF to the heads of educational divisions of municipalities, but also in a special meeting of the Educational and Cultural Committee of the Parliament of the Republic of Lithuania. In 2000, the number of the state final examinations rose up to three (plus additional examinations in biology, chemistry, physics). A larger amount of information and a possibility to compare results from the last two years was an encouragement to continue the work launched in 1999. This is a survey of the results of the state final examinations in 2000 with a slight change in its title. After the survey of 1999 there came up more questions than it was possible to answer or explain using the relevant material of final examinations. Therefore, this year's analysis is shaped in the form of questions rather than statements, and is titled ***Do all Lithuanian pupils have equal opportunities to obtain secondary education?***

In 2000, the National Examination Centre drafted several reports about results and exercises of the secondary education exams. This study is an effort to summarise general results of the state final examinations. The main concept, linking together several parts of this study, is related to equal opportunities so that every Lithuanian pupil could achieve most appropriate education. This right to the general secondary education can in no way depend upon the social or economic background of a pupil. This is a key principle in the democratic education system.

Further on, we will review general factors (except for pupils' personal capabilities and motivation to study), which can have impact upon the marks in final examinations and further opportunities to continue studies in higher educational institutions or find a job on a labour marker.

This study

- Investigates whether there are differences between male and female graduates in their results of the examinations and their determination to select the state final examinations;
- Analyses differences between schools of different types, tries to compare results of the final examinations and achievements of separate school groups
- Analyses in greater detail results of gymnasium pupils in every region, and how these results differ from the results of other graduates of the same region;
- Compares examination results in different municipalities (towns, districts). Methods used in the survey of 1999 provide a benchmark for the comparison of results of the secondary education examinations in both – cities and small districts. The study, as a continuation of work carried out in 1999, analyses results of the examination session in 2000 and the respective changes over the last two years.
- Further investigates basic factors which have major influence on the graduate's final examination results. This is important in ensuring equal educational opportunities for all Lithuanian school graduates. Thus, efforts are made to estimate the importance of a specific group factor (defined by a sex, region, type of school or school characteristics).

A statement from the surveying analysis of 1999 is worth repeating here: proper management of education requires constant and objective information about the ongoing processes in Lithuanian schools. However, over the last year the amount of the possessed information did not go up, nor did the amount of funds allocated for special educational research. Thus, it is necessary to use the available educational databases, including the database of the state final examinations. Major objectives of the secondary educations exams are to confirm achievements of a graduate and report them to higher educational institutions of Lithuania. Database of secondary education examinations is not maintained for specific educational surveys, which means that questions of this survey had to be based on the information available in the database (though explanation of the developments in educational processes frequently demands much more information). In recognition of the limited amount of information, we will not try to provide interpretations or justifications of the detected links, however, as in 1999, information will be presented in graphical format for wider discussions. Systematic differences in the results of the secondary education examinations among different groups of graduates are subject not only to academic research. Results of the final examinations largely determine a graduate's chances to continue studies at universities; therefore, any differences among groups of graduates are in the focus of educational policy. Thus, this graphical statistical analysis is aimed at providing statistical data, (without any interpretations and explanations), for the consideration of educational specialists and the society. Educational system is of intricate and complex character. We believe that the correct interpretation and explanation of the statistical information provided for in this study, as well as the search for methods how to reduce negative and promote positive factors, is an ultimate goal in the cooperation of Lithuanian educational specialists.

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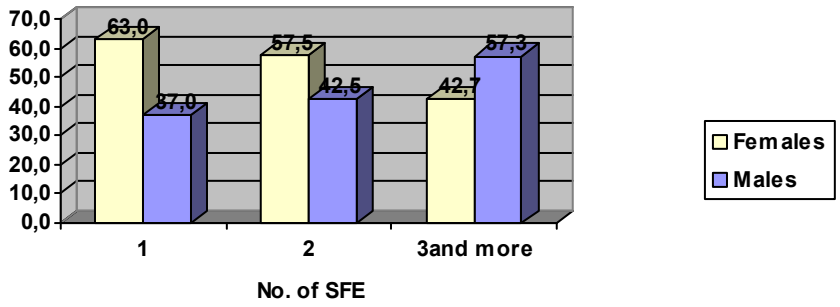
WHO ACHIEVES BETTER RESULTS IN SECONDARY EDUCATION EXAMINATIONS – MALE OR FEMALE GRADUATES?

The first aspect for considering changes in the results of secondary education examinations in 1999, was the sex of graduates. Therefore, the analysis of results of the final examinations in 2000 will start with the same question: who achieves better results in secondary education examinations – male or female graduates? The information from 1999 gave no distinct response; nor did the final examination session of 2000. Nevertheless, there is information to be considered in greater detail.

Selection of the state final examinations

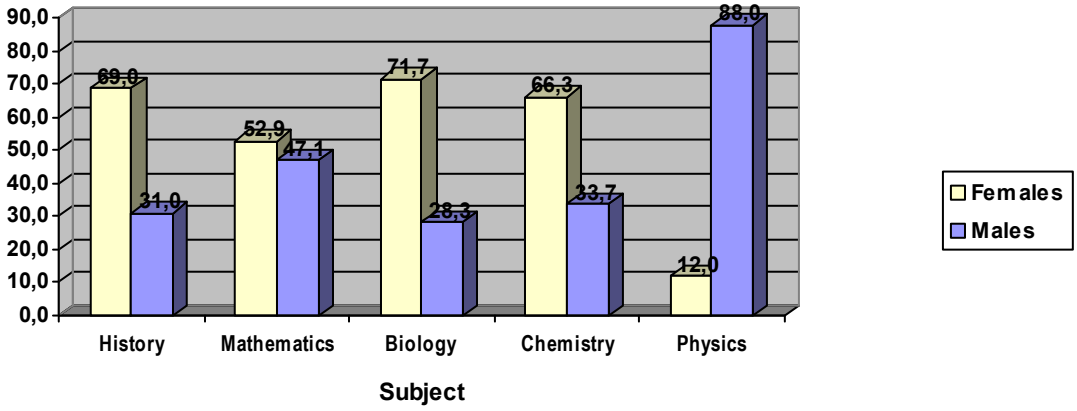
In 2000, 20688 applicants took five state final examinations (in history, mathematics, biology, chemistry, physics). Applicants included last-year pupils of comprehensive schools and gymnasiums, students of vocational and agricultural schools, students from the adult training centres, college institutions, graduates from the previous years who wanted to take repeatedly secondary education examinations. They had different reasons for selecting examinations, therefore, this study will concentrate only on 'traditional' pupils, i.e. those learning at comprehensive schools or gymnasiums, and their selection of final examinations and the respective results. According to records in the database of the National Examination Centre, the number of such graduates amounted to 18799. In 2000, a few graduates took more than one state final examination: 12974 graduates (60.2% of female graduates, and 39.8% of male graduates) took one or more state final examination. He proportion of male and female graduates corresponds to the proportion of boys and girls in higher classes of a comprehensive school. Male graduates were more determined and took several state final examinations. The factual information is provided for in diagram 1.

Diagram 1 Proportion of male and female graduates who selected several state final examinations



Differences in the selection of final examinations by subject in 2000 are presented in diagram 2 below.

Diagram 2. Proportion of male and female graduates in the secondary education examinations sorted out by subject.



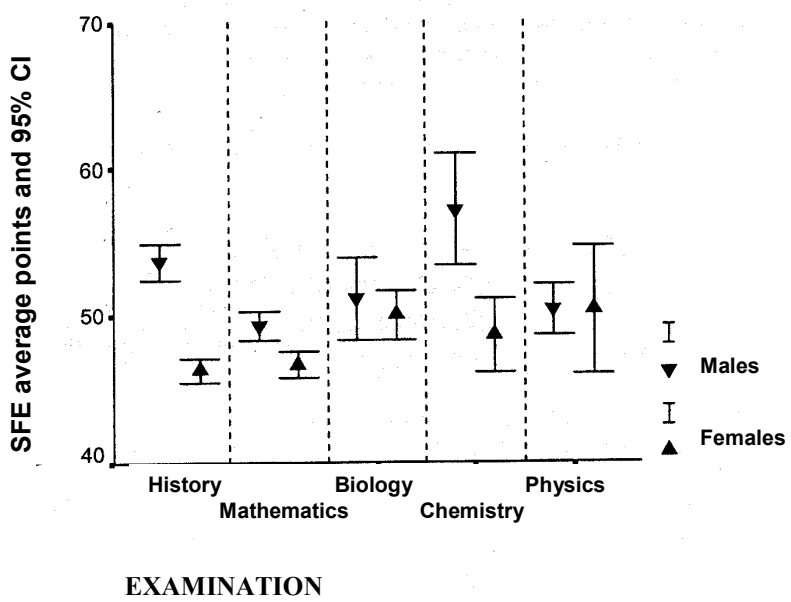
In 1999, more graduates took the state final examinations in history and mathematics by comparison with 2000. Female graduates made up 62.0 % of those who took the history exam, and 52.9 % of those who selected the mathematics exam. In 2000, the share of female graduates who selected the final history examination increased, whereas in the mathematics exam it remained the same. It is difficult to find explanation for the physics examination which was an opt-out of the general statistics, although this exam is rather similar to other examinations in nature sciences or mathematics. This may be explained by the fact that the preference to the biology exam or the chemistry exam is determined by the entrance requirements to the medicine study programmes at the University – most frequently marks for biology and/or chemistry examinations are required, and less frequently physic examination is necessary.

Results of the state final examinations

In 2000, the state final examinations were assessed in a hundred-point scale. The point for the state final examination was related to a pupil's rank among all successful applicants and indicated the pupil's relative position among his schoolmates. The same valuation system was also used in 1999, but the results of the examinations were grouped and the final assessment of the examination was produced in a ten-point scale. Introduction of a hundred-point scale allowed to achieve much higher accuracy in assessing results of examinations.

Quite unexpectedly, the sex factor had the major influence on the results of the history exam and chemistry exam rather than the physics examination, cf. diagram 3 bellow.

Diagram 3. Results of the state final examinations in 2000: average points for the state final examinations and 95% confidence intervals (CI).



As in 1999, average points for the state final examinations do not reflect all differences between male and female graduates. Additional information is provided by histograms dealing with distribution of examination results (where assessments in a hundred-point scale are grouped by 10). Upon analysing assessments for final examinations for male and female graduates in the histograms, it is evident that more male graduates received higher assessments in the state final examinations in history, mathematics, chemistry, physics (they also received lowest assessments in the physics examination).

Diagram 4. Distribution of results (in point groups) of the state final examination in history between female and male graduates

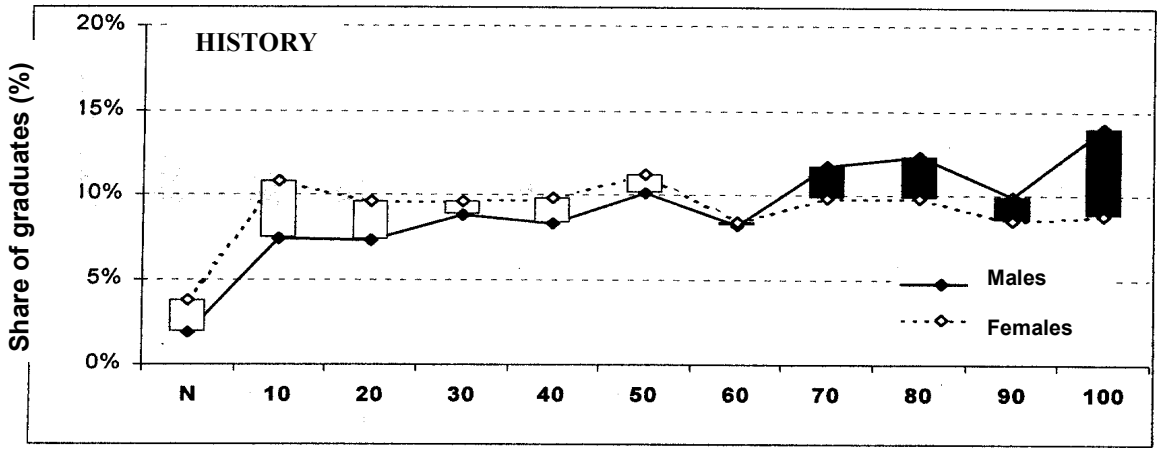


Diagram 5. Distribution of results (in point groups) of the state final examination in mathematics between female and male graduates

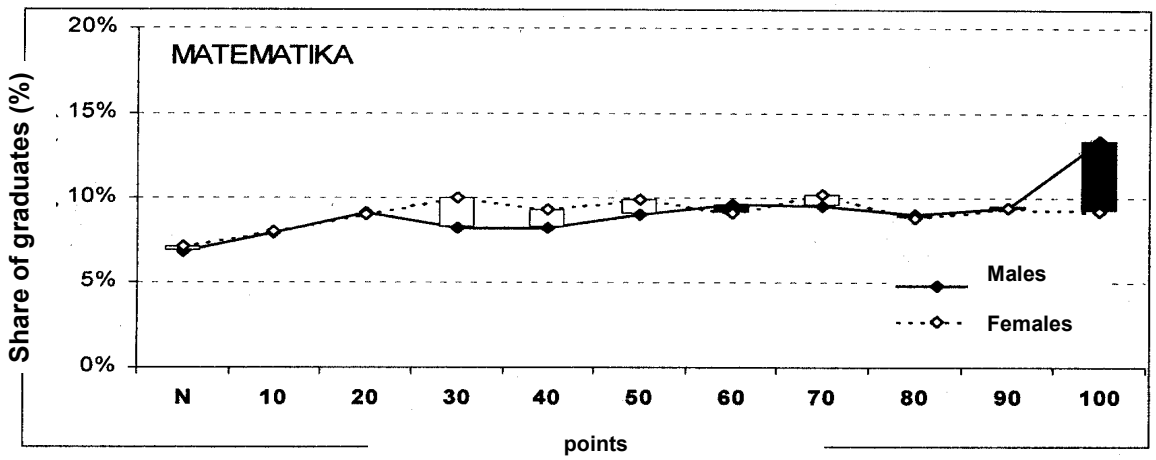


Diagram 6. Distribution of results (in point groups) of the state final examination in biology between female and male graduates

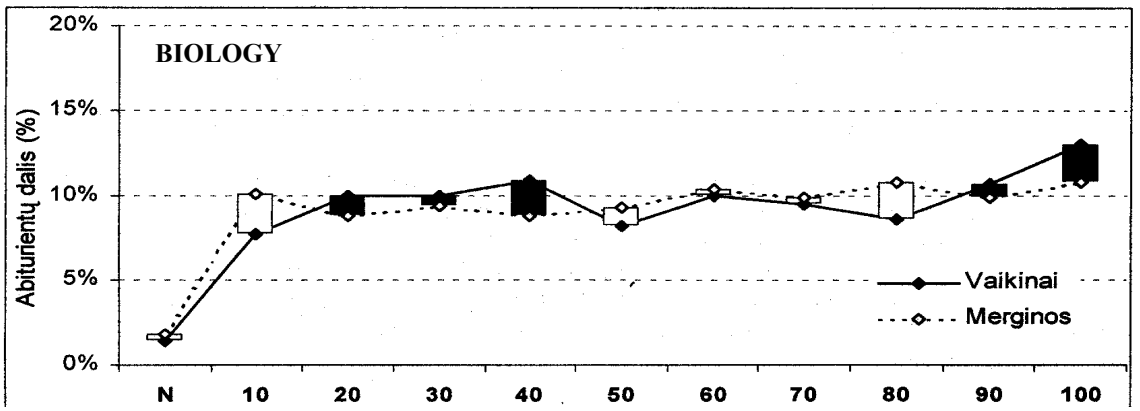


Diagram 7. Distribution of results (in point groups) of the state final examination in chemistry between female and male graduates.

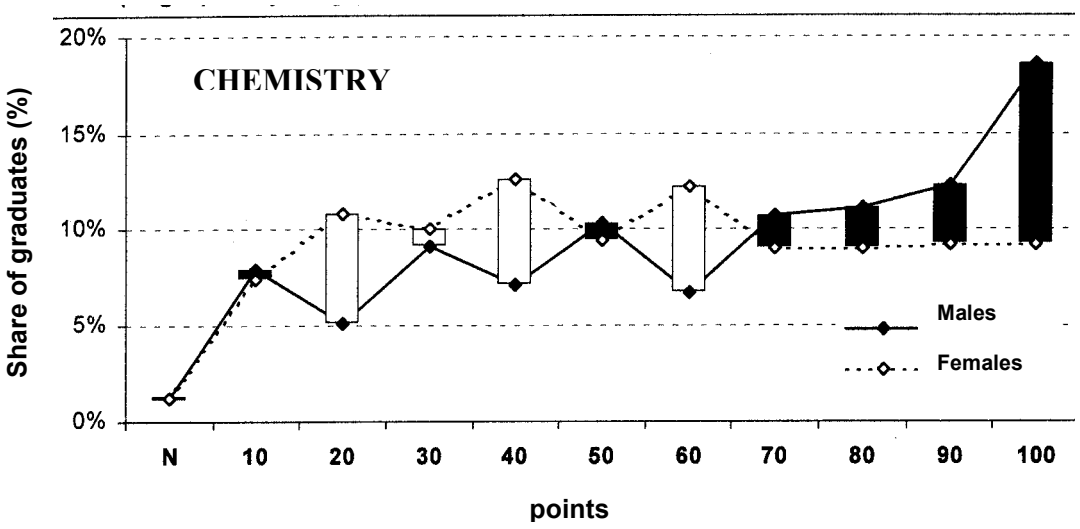
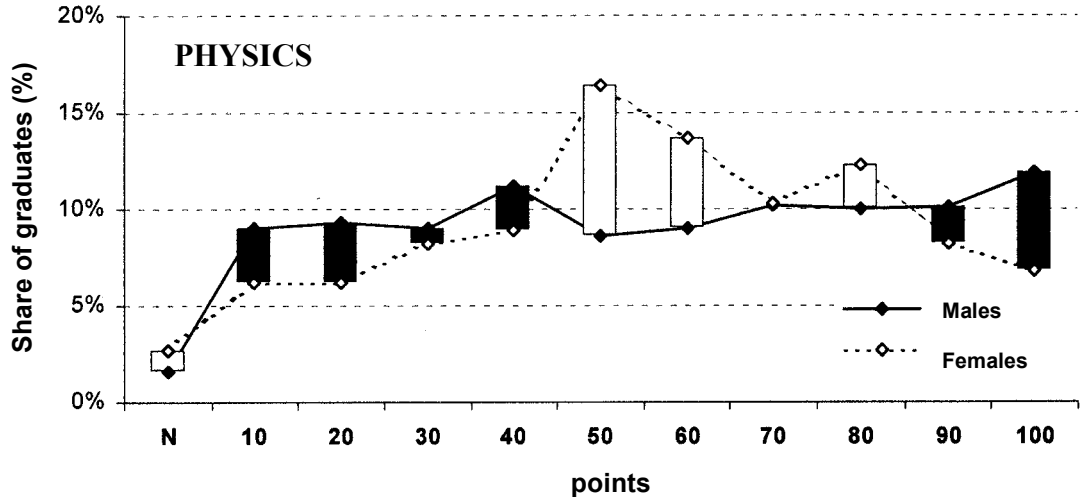


Diagram 8. Distribution of results (in point groups) of the state final examination in physics between female and male graduates



In the analysis of results of the secondary education examinations in 1999 and the international TIMSS-R research data, the following assumption regarding assessment differences between female and male graduates was made:

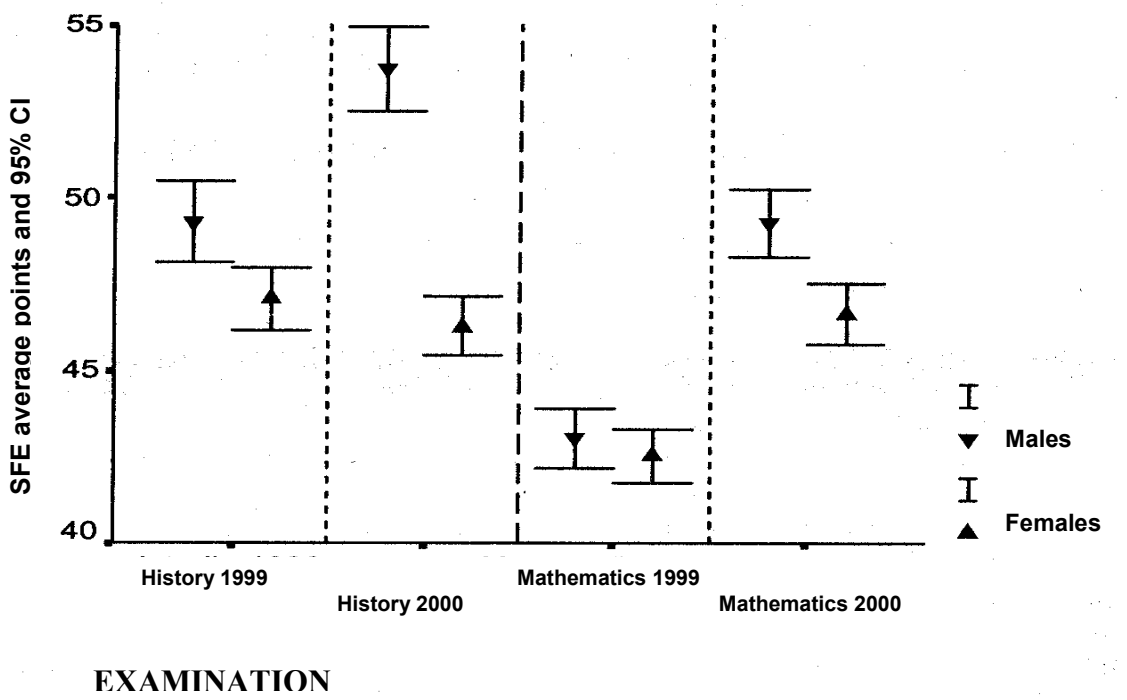
It is easier for girls to learn the humanities, which are in line with their feminine nature. Therefore, girls always receive higher points for the humanities, and lower for mathematics in comparison with the respective assessments for boys.

In 1999, this assumption was proved to be true by the results of the secondary education examination in the Lithuanian language, however, was refuted by the results of the final examination in history, which also belongs to the humanities. In 1999, male graduates did not show

worse results in the secondary education examination in history by comparison with female graduates. Results of the final examinations in 2000 do not confirm the above-mentioned assumption: male graduates were better at the history exam, while female graduates showed sufficiently good results in the physics examination. The further evidence will come in a couple of years when secondary education examinations in the Lithuanian language and foreign language will also be reformed into exams on either a school level, or the national level.

Comparison of results of the state final examinations in history and mathematics in 1999 and 2000 shows that the gap in the average examination results between male and female graduates is increasing (Diagram 9).

Diagram 9. Comparison of results of the state final examinations in history and mathematics in 1999 and 2000: average points and 95% confidence intervals.



Average results of the mathematics examination in 1999 were nearly the same for male and female graduates. The history examination produced minor differences between males and females, however, in 2000, male graduates achieved much better results in the state final examination in history. Results of male graduates are also better in the mathematics examination. It is difficult to find explanation for this increasing gap using results of only two examination sessions.

WHAT SCHOOLS ACHIEVED BEST RESULTS IN THE STATE FINAL EXAMINATIONS?

As in 1999, it is difficult to say which school is the best one, since there are no objective criteria for the comparison of schools. Three years ago the National Examination Centre started issuing a publication, which lists the summary of results in secondary education examinations in each school. These, however, should not be regarded as ratings that identify either 'good' or 'bad' schools. This section will try to analyse results of the state final examinations in separate groups of

comprehensive schools. Schools will be grouped according to different criteria to get evidence whether there is any difference in the results for the state final examinations:

- In schools with different school language (Lithuanian, Russian, Polish);
- In urban and rural schools;
- In schools of different size (with different number of graduates);
- Gymnasiums and comprehensive schools.

Are There any Differences in Examination Results in Schools with a Different School Language?

In 2000, graduates attended comprehensive schools and gymnasiums with the school language of Lithuanian, Russian, Polish, or Belorussian. The Belorussian language is used in only one school, therefore, we will not analyse this group of ten pupils in greater detail. The database of the state final examinations contains records about the school language of a school, but a school where several languages are used poses certain difficulties in identifying the language of a graduate. With respect to this factor, schools, according to the school language used at school, will be subdivided into four groups: Lithuanian, Russian, Polish, mixed (where several languages are used in the educational process). General characteristic of such schools is provided in Table 1.

Table 1. Selection of the state final examinations in schools with a different school language

	Lithuanian	Russian	Polish	Mixed
Number of schools	559	62	15	26
Number of graduates at schools	18783	2630	355	944
Number of graduates who took the State final exam in history	6140	474	111	225
Number of graduates who took the State final exam in mathematics	6951	886	131	293
Number of graduates who took the State final exam in biology	1423	86	25	59
Number of graduates who took the State final exam in chemistry	615	80	11	47
Number of graduates who took the State final exam in physics	1016	165	11	50

Note: This table provides information ONLY about those comprehensive schools and gymnasiums, where at least one graduate took at least one state final examination

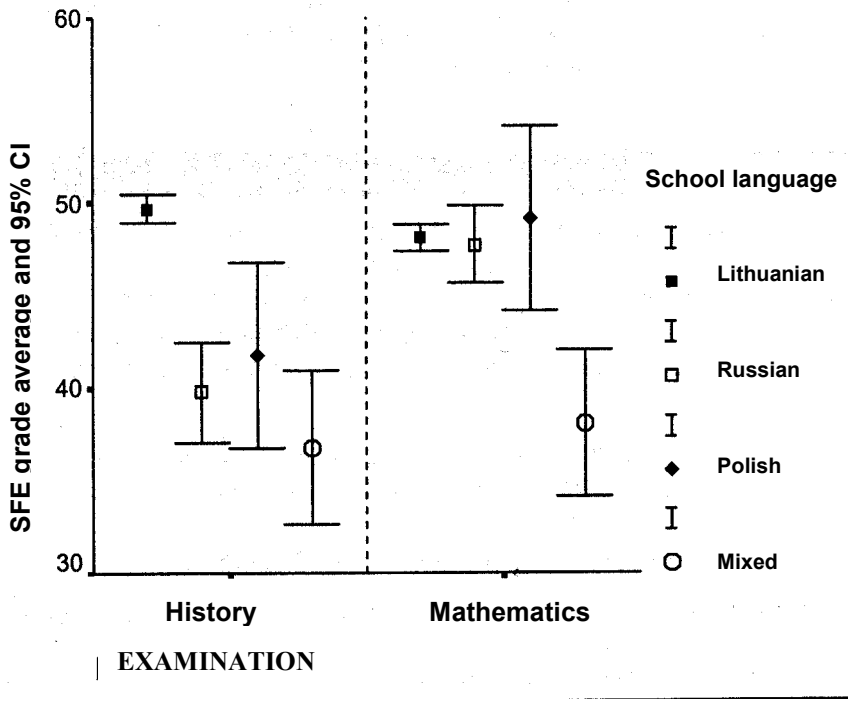
The four groups of schools differ not only by a different number of pupils, but also by the selection of the state final examinations. The history exam and the biology exam were a bit less popular in Russian schools, whereas the physics examination was not that popular in Polish schools (cf. table 2).

Table 2. Selection of state final examinations in schools with a different school language

	Lithuanian	Russian	Polish	Mixed
Share (%) of graduates who took the State final exam in history	32.7%	18.0%	31.3%	23.8%
Share (%) of graduates who took the State final exam in mathematics	37.0%	33.7%	36.9%	31.0%
Share (%) of graduates who took the State final exam in biology	7.6%	3.3%	7.0%	6.3%
Share (%) of graduates who took the State final exam in chemistry	3.3%	3.0%	3.1%	5.0%
Share (%) of graduates who took the State final exam in physics	5.4%	6.3%	3.1%	5.3%

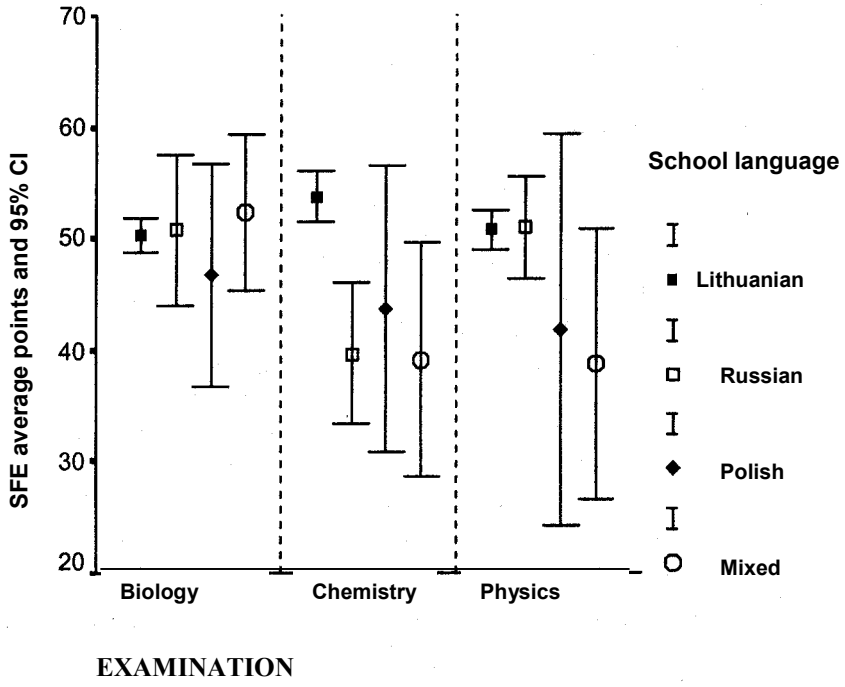
Comparison of results of the state final examinations in Lithuanian, Russian and Polish schools (cf. diagram 10) does not reveal a considerable difference in the results of the mathematics exam. Results of the history exam in Russian and Polish schools are distinctly worse. This phenomenon can be linked with the pupils' motivation to take this examination, as this exam was also an entrance examination to the social study courses in many universities of Lithuania. Nevertheless, it is difficult to say whether poorer examination results discourage pupils from further studying social subjects, or preference to other studies determine poorer results in the history examination. Pupils achieved worse results in the final examinations in those schools that use several languages. Reasons for that should be sought in a wider context of the social-cultural environment of the school.

Diagram 10. Comparison of results of the state final examinations in history and mathematics in schools with different school language (average points for examinations and 95 % confidence intervals)



Results of examinations in nature sciences are similar in schools with several school languages (with the exception of the chemistry exam which was better in Lithuanian schools). This is another proof that differences in results of the secondary education examinations among pupils with different school language must be explained not only by linguistic reasons but also by wider contextual considerations.

Diagram 11. Comparison of results of the state final examinations in biology, chemistry and physics in schools with different school language (average points for examinations and 95% confidence intervals)



Note: All exercises for the state final examinations are only in Lithuanian, but key terms and phrases in exercises are translated into Russian and Polish (printed in the footnotes of the page).

Are There any Differences in Examination Results between Urban and Rural Schools?

Distinction between urban and rural schools is made in many educational researches, although there are no clear criteria for attributing a school to either a rural or urban school. In the list of comprehensive schools it easy to identify schools of cities or larger district centres. However, whether schools in small towns can be regarded as rural schools is a matter of discussions. Thus, in analysing the database of the state final examinations, all schools were grouped into the following three categories:

- Schools in largest cities of Lithuania (Vilnius, Kaunas, Klaipeda, Siauliai, Penvezys);
- Schools in administrative centres of districts (Marijampole, Utena, Anyksciai, Jonava, Ignalina, Visaginas, Druskininkai, etc.);
- Schools in other places (e.g. Vievis, Garliava, Maisiagala, Rietavas, Salantai, etc.).

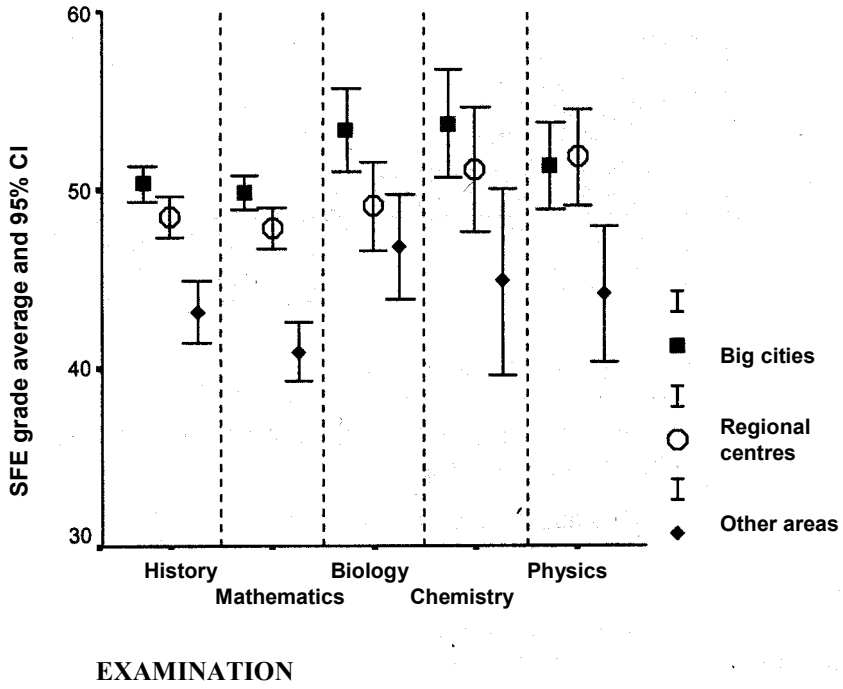
The three types of schools differ not only by the size and the number of graduates (city schools make up the largest group, schools in other places form the smallest group), but also by the selection of the state final examinations. Final examinations in history and mathematics were more frequently selected by the graduates in city schools and schools in administrative centres of regions. Quite unexpectedly, examinations in nature sciences were more popular among graduates residing in small towns, and attending schools attributed to the third type (schools in other places), cf. Table 3 below.

Table 3. Selection of the state final examinations by graduates attending different schools: a share of graduates of the relevant school who selected the state final examination

	Large cities	District centres	Other places
Share (%) of graduates who took the State final exam in history	33.2%	33.8%	24.3%
Share (%) of graduates who took the State final exam in mathematics	42.2%	36.4%	27.6%
Share (%) of graduates who took the State final exam in biology	7.6%	7.9%	12.2%
Share (%) of graduates who took the State final exam in chemistry	5.1%	4.8%	7.3%
Share (%) of graduates who took the State final exam in physics	9.0%	7.7%	11.0%

Comparison of graduates' examination results shows that pupils in small towns received poorer results in the state final examinations in history and mathematics. Popularity of the examination in nature sciences in this group does not, unfortunately, indicate better results for this examination among graduates from rural areas, although differences among the respective school groups are lower considering the results for examinations in biology, chemistry, and physics (cf. diagram 12). Such a comparison of results in all three groups of schools must lead to the understanding that differences depend not on a group to which a school is attributed, but on the whole complex of social, economic and cultural factors which divide these groups. Therefore, reasons to explain graduates' poorer results and ways to achieve equal opportunities in obtaining secondary education must be explored in a much broader context.

Diagram 12. Comparison of results of the state final examinations in history, mathematics, biology, chemistry and physics in different places (average points for examinations and 95 % confidence intervals)

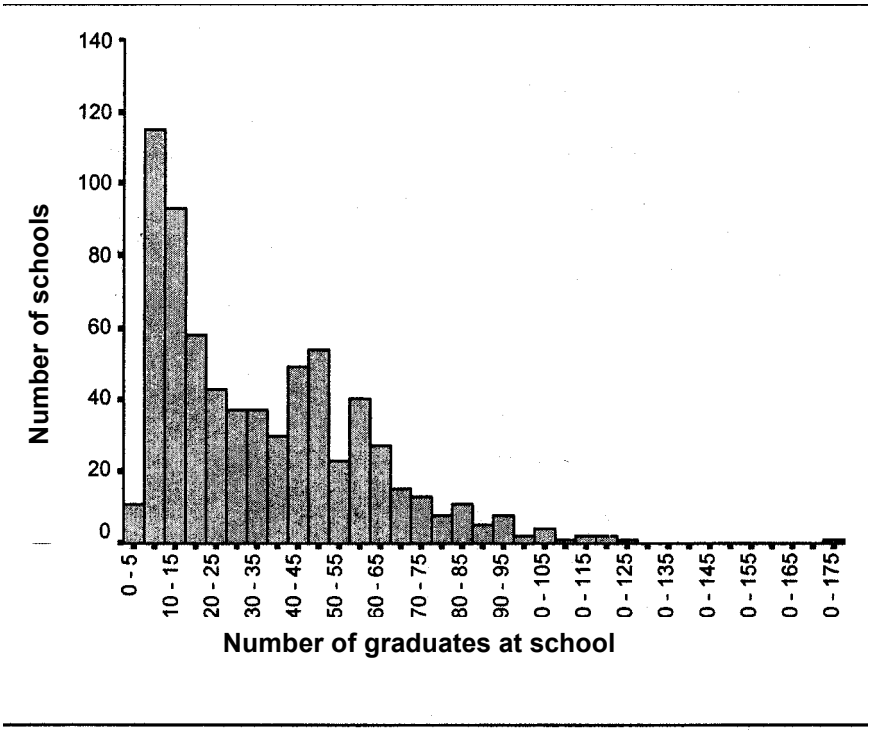


Does a Different Size of Schools Affect Results of Examinations?

Lithuanian educational system is marked for a relatively large number of small schools. Leaving aside their social-cultural environment, maintenance and financial considerations, we will try to analyse results of the secondary education examinations in these schools. Different results of final examinations cannot be based only upon the size of schools. The majority of small schools are located in rural settlements where social-economic environment is different from that of, say, Vilnius. Besides, educational potential in small schools frequently is not as good as that in large schools, whereas entrance requirements at universities are uniform for all applicants.

Diagram 13 lists data about the number of comprehensive schools and gymnasiums in terms of their size (measured by the number of graduates in 2000). It must be noted that in 2000, there were almost two hundred small schools, which had less than 15 graduates, whereas only several large schools had more than 100 graduates. According to the data of the National Examination Centre, more than 150 graduates took the compulsory secondary education examination in the Lithuanian language in Vilnius Mykolas Birziska Gymansium and Utena Adolfas Sapoka Gymansium, more than a hundred graduates selected this examination in Vilnius Sofija Kovalevskaja comprehensive school, Stanevicius comprehensive school, Druskininkai Rytas comprehensive school, Kaunas A.Puskinas comprehensive school, and Marijampole 6th comprehensive school, as well as in Vilnius Zemyna Gymnasium, Kaunas Saule Gymnasium and J.Jablonskis Gymnasium. This list is not very long indeed (adult schools are very large in this sense (e.g. more than 500 students took the secondary education examination in the Lithuanian language in Kaunas Adult Training Centre) but this study deals only with comprehensive schools).

Diagram 13. Distribution of Lithuanian comprehensive schools and gymnasiums by their size.



According to the number of graduates in 2000, all Lithuanian comprehensive schools and gymnasiums can be subdivided into the following groups:

- Very large more than 60 graduates
- Large 31 – 60 graduates
- Medium 21 – 30 graduates
- Small 11 – 20 graduates
- Very small up to 10 graduates

22938 graduates from 2000 who learned at 690 comprehensive schools and gymnasiums were grouped by the size of school. This classification is presented in diagrams 14 – 15 (information from 1999 is given as a comparative data – in 1999, the total of 24353 graduates learning in 687 comprehensive schools and gymnasiums participated in the state final examinations). Diagram 14 compares the total number of schools; diagram 15 lists the number of graduates in schools of the respective size. Two years is a very short period, and no major differences can be traced. There is a slight reduction in the number of very large and large schools, therefore more graduates attend medium and smaller schools.

Diagram 14. The size of comprehensive schools and gymnasiums (by number of graduates) in 1999 and 2000: ***the number of schools***

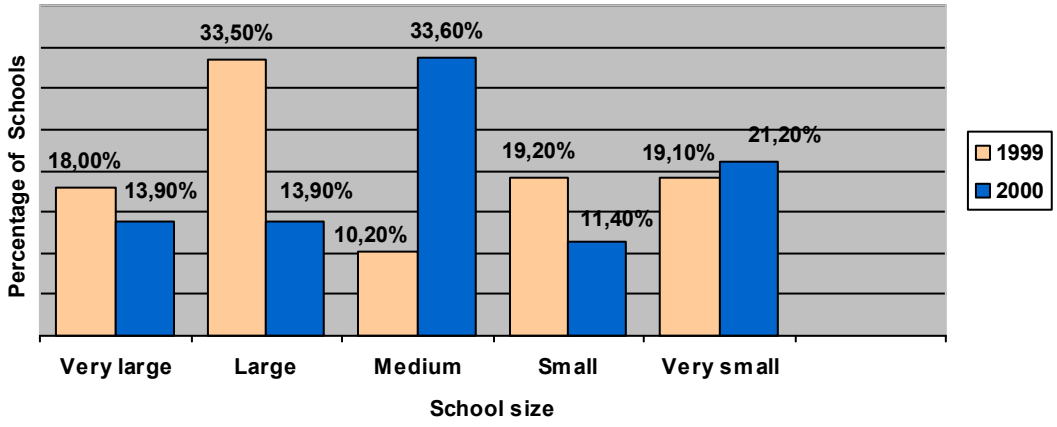
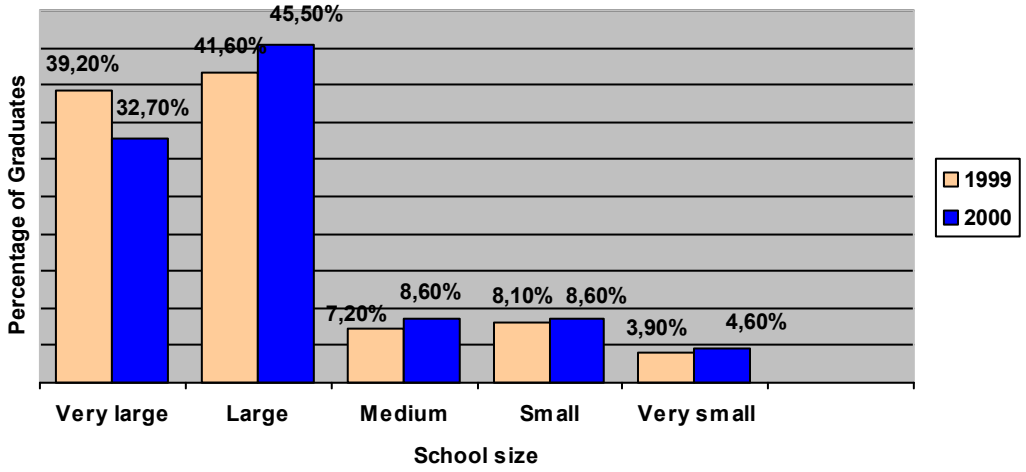


Diagram 15. The size of comprehensive schools and gymnasiums (by number of graduates) in 1999 and 2000: ***the number of graduates***



Diagrams 16 – 17 list results of the state final examinations in groups of graduates defined by the size of schools. Differences are obvious, though they cannot be explained only by the size factor, since schools differ not only in size, but also social-cultural and economic environment, which determines pupils' motivation to study and affects their examination results.

Diagram 16. Results of the state final examinations in history and mathematics in schools of different size (average points and 95% confidence intervals).

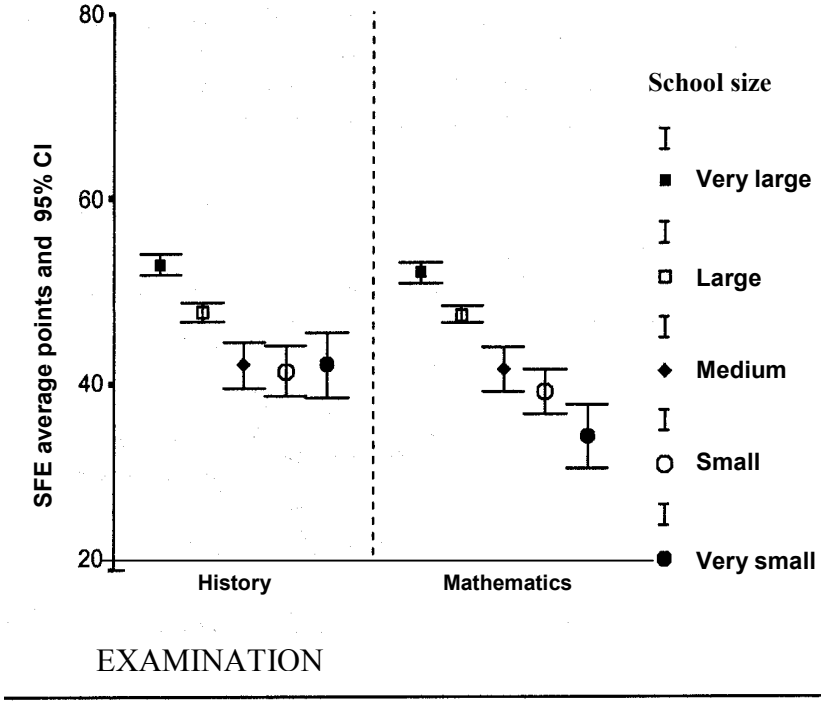
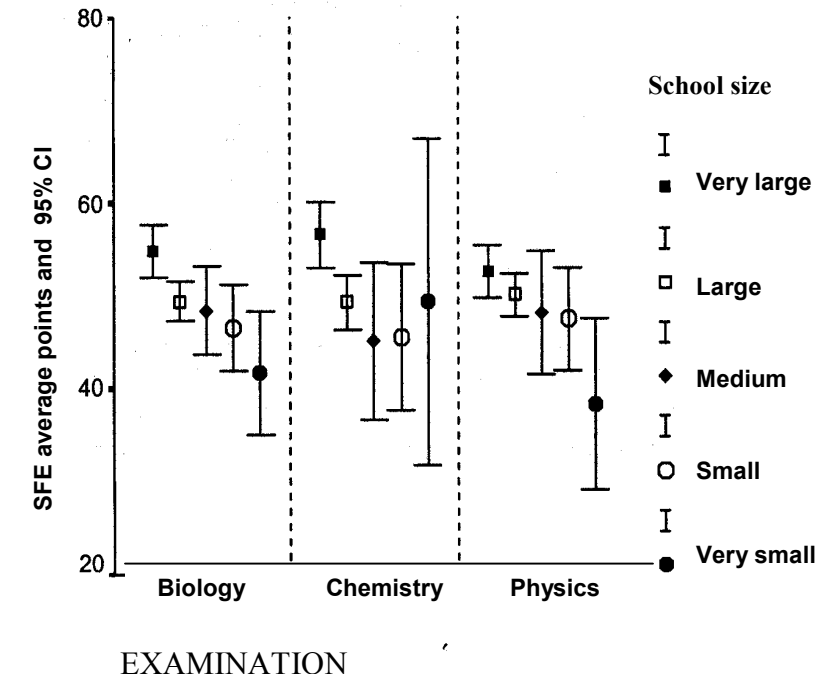
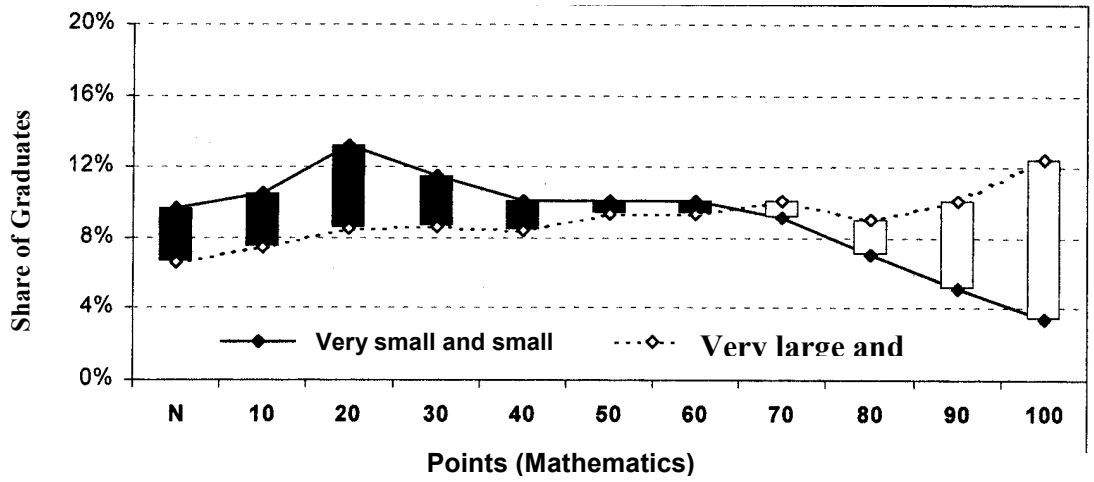


Diagram 17. Results of the state final examinations in biology, chemistry and physics in schools of different size (average points and 95% confidence intervals).



Differences in groups defined by the size of schools become even more obvious when analysing not the average results of the state final examinations, but distribution of examination marks in groups of graduates defined by the size of schools. For example, if very small and small schools are combined into one group, and large and very large schools into another group, it becomes evident that in the highest assessment group (90 – 100 points) for the mathematics examination there are three times more pupils from large schools than from small schools (diagram 18).

Diagram 18. Results of the state final examination in mathematics in 2000. The share of graduates from differently sized schools and their achievement groups



Are There any Differences between the Examination Results of Comprehensive Schools and Gymnasiums?

Gymnasiums were instituted ten years ago. Ten years is not that much but changes over time affected not only the number of gymnasiums (it is constantly rising), but also the very concept and goals of gymnasiums. Therefore, let's analyse statistical data of pupils in comprehensive schools and gymnasiums considering several aspects of this information.

Comparison of the available data revealed a serious problem, which is the lack of the reliable statistics. The database kept by the National Examination Centre is intended for examinations, and contains information about pupils who take final examinations for either basic or secondary education certificates, and schools where these examinations are held. However, sometimes gymnasiums have 'non-gymnasium' classes, and certain comprehensive schools have instituted gymnasium classes. So, what is the best way to estimate the total number of those learning in comprehensive schools and gymnasiums? As we have no clear response to this question (as executives of the secondary education examinations we can confirm **that all graduates in Lithuania take uniform final examinations, therefore, during the examination session there is no need to distinguish between those studying in comprehensive schools and gymnasiums**), on the basis of the results of the only compulsory final examination in the Lithuanian language, we will try to distinguish the following groups of pupils:

- Gymnasium graduates who took the compulsory final exam in the Lithuanian language, i.e. all gymnasium graduates, including those from 'non-gymnasium' classes who took A- or B-level secondary education examinations in the Lithuanian language (as a native language or as a official language of the State). Such a definition of the group reflects a bit higher than the actual number of gymnasium pupils. Results of the secondary education examinations in this group can be slightly worse than these in the group of 'pure' gymnasium pupils.
- Other graduates in comprehensive schools who took the compulsory final examination in the Lithuanian language. This group also includes graduates from the gymnasium classes of that school (the number of such schools is not large).

Such a division will not increase differences in the selections and results between gymnasium pupils and other graduates. Therefore, differences analysed in this survey can be even greater if gymnasium pupils and graduates of other comprehensive schools are precisely identified.

The answer to the above-set question whether gymnasium pupils and other graduates produced different examination results, is evident – gymnasium pupils were much better at the state final examinations in 2000. Diagram 19 lists average points for the state final examinations in comprehensive schools and gymnasiums.

Differences visualized in the diagram are quite reasonable, since they reflect the actual trend (which is not very appreciated and thus sometimes kept in silence) in the educational reform – establishment of elite educational institutions intended for pupils with strong motivation and effective learning capabilities. The results of the examination in mathematics, which is one of the most differentiating subjects for pupils, entailed greatest differences.

A similar difference in results of examinations between the two types of schools was also noticed in 1999. Diagram 20 compares results of the secondary education examinations in history and mathematics in 1999 and 2000. The detected differences in examination results are very similar, thus the gap between the gymnasium pupils and graduates of comprehensive schools remains stable (at least for the last two years).

Diagram 19. Results of the state final examination in mathematics in 2000 in comprehensive schools and gymnasiums (average points for examinations and 95 % confidence intervals)

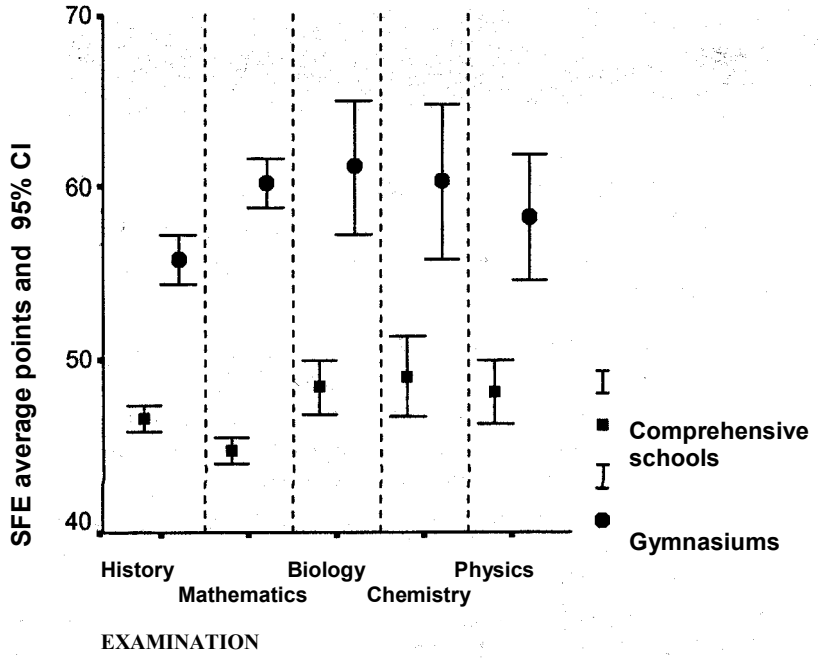
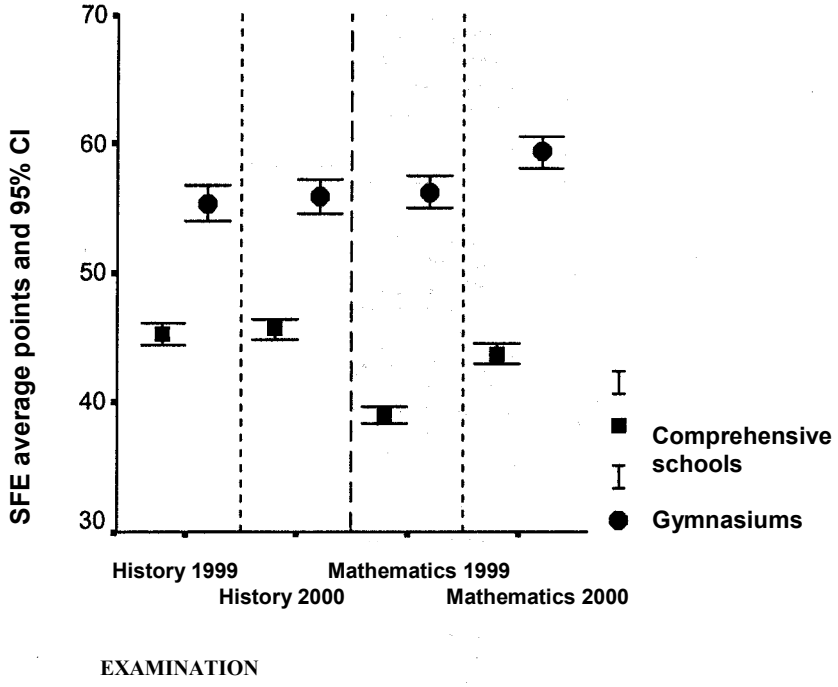


Diagram 20. Comparison of results of the state final examinations in 1999 and 2000 in comprehensive schools and gymnasiums (average points for examinations and 95 % of confidence intervals)



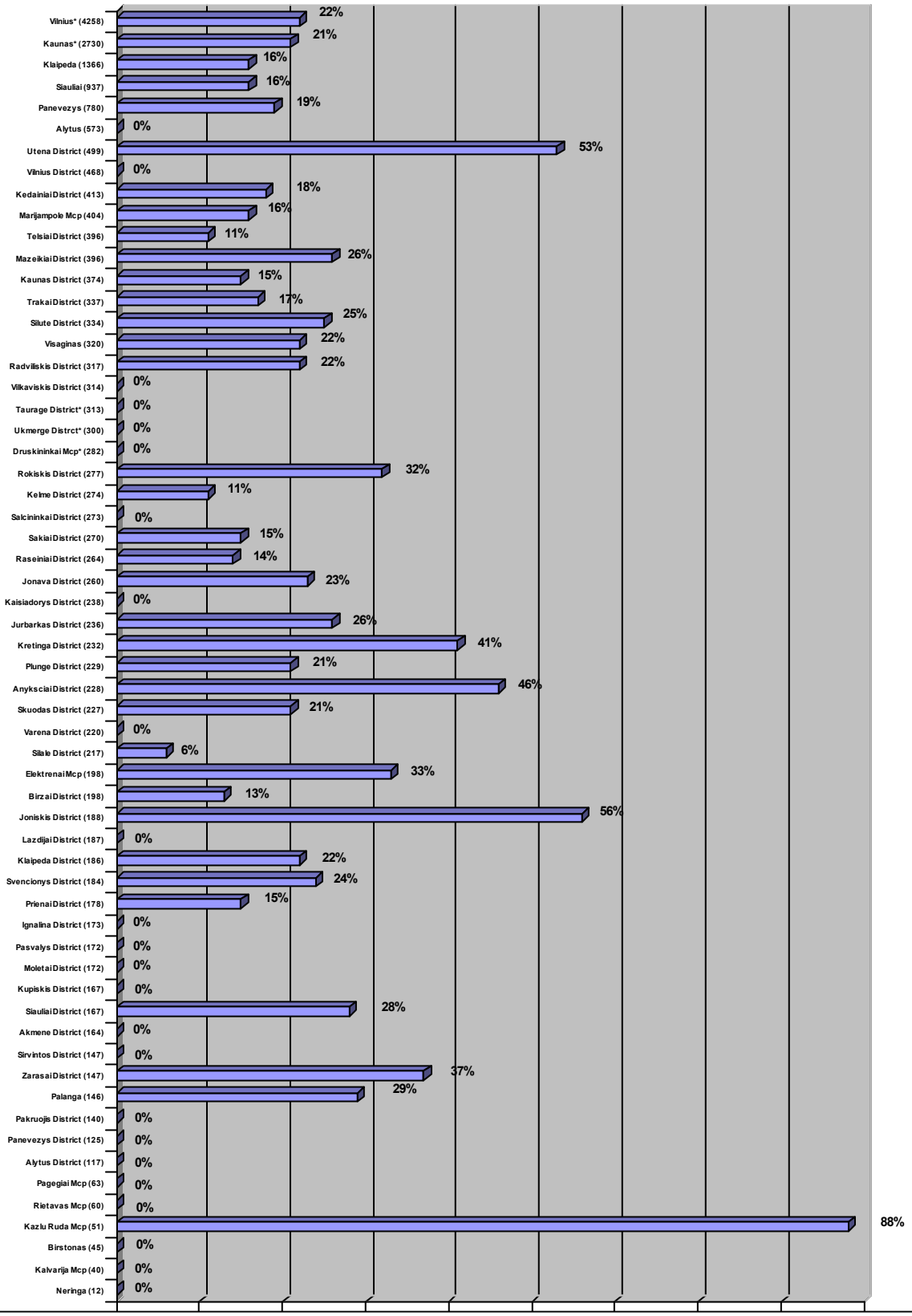
The second step in the survey of gymnasiums is a simple one but of a more general character – let's try to estimate the share of gymnasium pupils in every region in the total number of comprehensive school graduates of that region. Further on, let's try to analyse whether there are differences in the selections and results of the state final examinations between gymnasium pupils and comprehensive school graduates, i.e. let's narrow the focus from the problems of the country to these of a particular region (district, town, municipality). Such a comparison makes it possible to:

- Assess opportunities for every graduate to become a gymnasium pupil (if there are more gymnasiums in a town, it is easier to enter them. Nevertheless, certain regions do not have a single gymnasium…);
- Compare motivation of gymnasium pupils and other graduates in the selection of the national secondary education examinations;
- Estimate differences in the results of the secondary education examinations between best gymnasium pupils and other graduates.

Diagram 21 lists information about the distribution of gymnasiums in Lithuanian regions, in terms of the proportion of gymnasium pupils and other graduates of comprehensive schools. From the diagram it is evident that many regions do not have gymnasium graduates (it must be noted that 3 districts have gymnasium classes in the comprehensive schools. These districts are marked in the diagram). The newly established municipality of Kazlu Ruda is distinguished by the fact that nearly all graduates attend Kazys Grinius Gymnasium. A very large share of gymnasium pupils can be found in the regions of Utena, Rokiskis, Joniskis (more than 50 per sent of all graduates). In cities of Lithuania, the majority of gymnasium graduates were in Vilnius and Kaunas, the lowest number of gymnasium pupils was registered in Siauliai and Alytus gymnasiums.

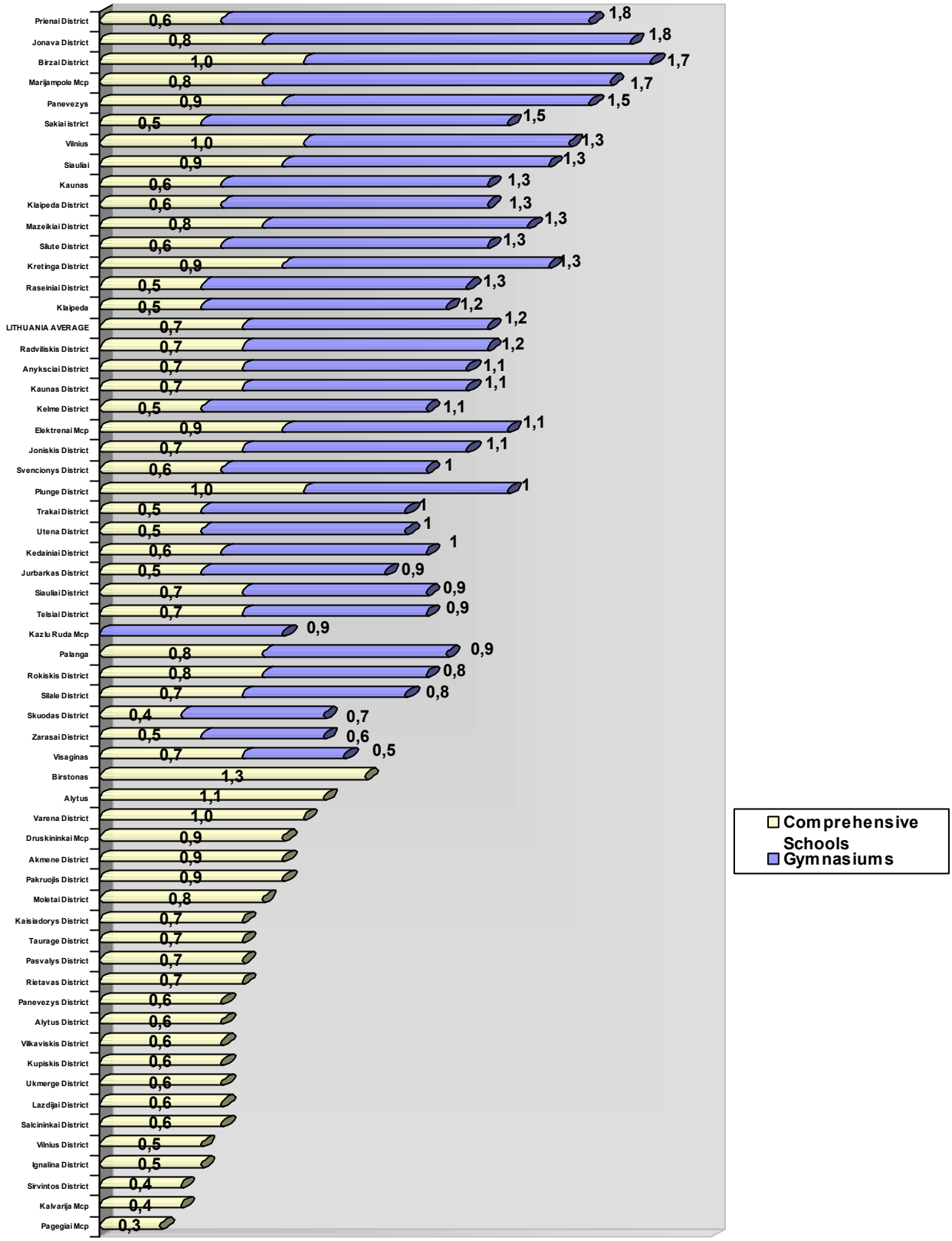
Diagrams also present information about those regions where gymnasiums are still absent.

Diagram 21. Share of graduates* in urban/rural gymnasiums in 2000 in number and in percentage



NB: *Numbers are based on the information about graduates in comprehensive schools and gymnasiums who took the compulsory examination in the Lithuanian language.*
*Municipalities where gymnasium classes are instituted in schools of general education were marked *, however, results of final examinations in such classes are not analysed separately.*

Diagram 22. "Popularity" of State final examinations in 2000: how many State final examinations were selected by one graduate in a municipality (in gymnasiums and other secondary schools of general education)

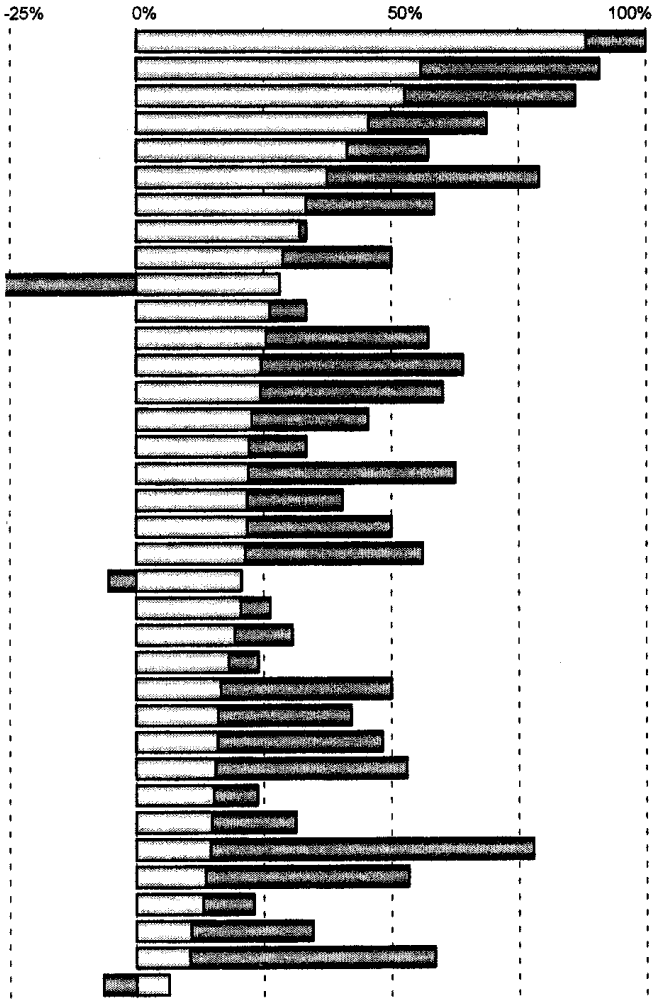


Further on, let's proceed to the analysis of differences in the selection of the state final examinations between comprehensive school graduates and gymnasium pupils in a particular region. In 2000, five state final examinations were organized; all together they involved more than 20 000 applicants. We focus only upon pupils of comprehensive schools and gymnasiums, and will try to estimate how many of them took the compulsory secondary education examination in the Lithuanian language (as a native language or as a official language in non-Lithuanian schools). The derived ratio shows the average number of the state final examinations for one graduate in Lithuania (cf. diagram 22). We selected this statistics to avoid the influence of the type of gymnasium on the selection of the examinations - it would be natural that graduates of exact sciences gymnasiums give preference to examinations in nature sciences and mathematics, whereas those who attend humanities-based gymnasiums, select history examinations. Such a generalized statistics reflects overall difference in the popularity of the state final examinations in regional schools of different types. On average, each gymnasium graduate took 1.2 state final examinations, whereas a graduate of a comprehensive school took only 0.7 secondary education examinations. The difference is evident. In analysing regional differences in the popularity of the state final examinations, the town of Visaginas is an opt-out from the general statistics: state final examinations are not very popular in the Atgimimas Gymnasium, which is the only gymnasium in town. Gymnasiums in Plunge and Rokiskis districts follow the general statistical trend, however, in districts of Prienai or Sakiai, state final examinations were three times more popular among gymnasium pupils than among other graduates.

After considering selections of the state final examinations, we should proceed to the analysis of the examination results. The analysis should be made in the following way: let's estimate the share of gymnasium pupils in the total number of graduates of each region. The estimated percentage must be compared with a percentage, indicating the share of gymnasium pupils who received the highest assessment (75 – 100 points, cf. diagram 23). Such a method allows to compare regions of different size and to eliminate the influence of the gymnasium type (based on either sciences or humanities) and the principle of 'Olympic' participation – the number of graduates who did not receive good marks for the final examinations has no influence on the final results. Difference between these percentages makes it possible to estimate the diversity of gymnasium graduates in the region – the proportion between the number of graduates with best examination results in a group and the number of such graduates in the whole region. In diagram 23 this difference is marked in darker shades. Gymnasium graduates in Siauliai, Skuodas and Silale districts showed worse results in the State final exam in history by comparison with other graduates of the same district (the reason for that can be the type of gymnasium in these districts - Kursenai L.Ivinskis gymnasium, Skuodas P.Zadeikis gymnasium, and Laukuva gymnasium). Since the darker shade in the diagram indicates difference in examination results between gymnasium pupils and other graduates, this difference is negative in these three districts and can be easily distinguished among other districts where gymnasium pupils produced better history examination results than other graduates.

Diagram 23. Share of gymnasium graduates among those who produced best results (75 – 100 points) in the State Final History Examination.

Region	Share of gymnasium graduates in the region	Share of gymnasium graduates among the best
Kazlų Rūdos sav.	88,2%	100,0%
Joniškio r.	55,9%	90,9%
Utenos r.	52,7%	86,0%
Anykščių r.	45,6%	68,8%
Kretingos r.	41,4%	57,1%
Zarasų r.	37,4%	78,9%
Elektrėnų sav.	33,3%	58,3%
Rokiškio r.	32,1%	33,3%
Palangos m.	28,8%	50,0%
Šiaulių r.	28,1%	0,0%
Jurbarko r.	26,3%	33,3%
Mažeikių r.	25,5%	57,1%
Šilutės r.	24,6%	64,0%
Švenčionių r.	24,5%	60,0%
Jonavos r.	22,7%	45,5%
Visagino m.	22,2%	33,3%
Klaipėdos r.	22,0%	62,5%
Vilniaus m.	21,8%	40,4%
Radviliškio r.	21,8%	50,0%
Kauno m.	21,4%	56,1%
Skuodo r.	20,7%	15,4%
Plungės r.	20,5%	26,3%
Panevėžio m.	19,4%	30,6%
Kėdainių r.	18,2%	24,0%
Trakų r.	16,6%	50,0%
Klaipėdos m.	16,1%	42,0%
Šiaulių m.	16,0%	48,1%
Marijampolės sav.	15,6%	52,9%
Kauno r.	15,2%	23,8%
Šakių r.	14,8%	31,3%
Prienų r.	14,6%	77,8%
Raseinių r.	13,6%	53,3%
Biržų r.	13,1%	23,1%
Telšių r.	10,9%	34,5%
Kelmės r.	10,6%	58,3%
Šilalės r.	6,5%	0,0%

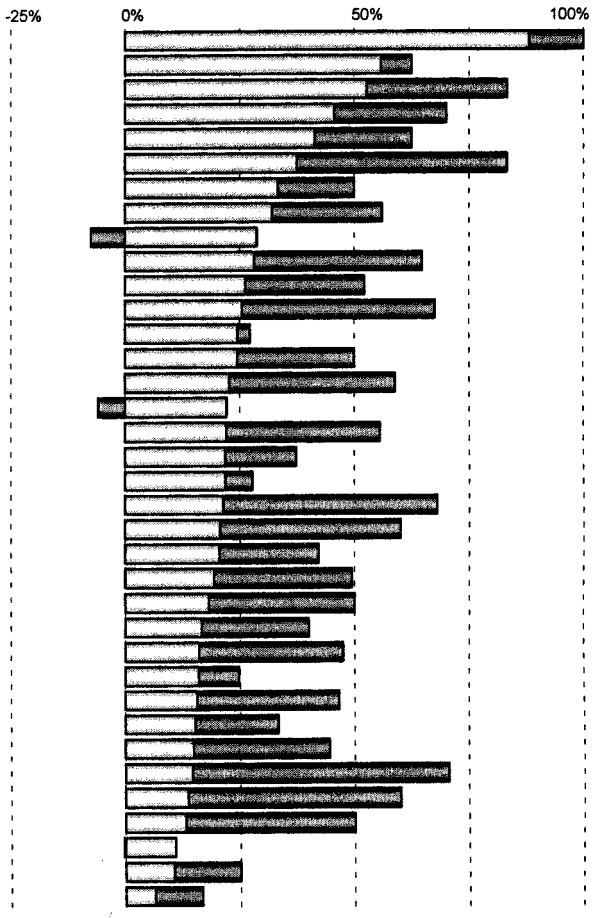


m. = City/ Town
r. = District
sav. = Municipality

Results for the state final examination in mathematics distinguish gymnasium graduates in Palanga and Visaginas (cf. diagram 24). Graduates in Palanga Senoji gymnasium and Visaginas Atgimimo gymnasium were the only ones who produced worse results in the mathematics examination in comparison with their schoolmates in the comprehensive schools.

Diagram 24. Share of gymnasium graduates who produced best regional results (75 – 100 points) in the state final examination in mathematics in a group of graduates (the darker shade indicates the difference between the two percentages: the share of gymnasium graduates among those who got very good results, and the share of gymnasium graduates in the region).

Region	Share of gymnasium graduates in the region	Share of gymnasium graduates among the best
Kazlų Rūdos sav.	88,2%	100,0%
Joniškio r.	55,9%	62,5%
Utenos r.	52,7%	83,3%
Anykščių r.	45,6%	70,0%
Kretingos r.	41,4%	62,5%
Zarasų r.	37,4%	83,3%
Elektrėnų sav.	33,3%	50,0%
Rokiškio r.	32,1%	56,0%
Palangos m.	28,8%	21,4%
Šiaulių r.	28,1%	64,7%
Jurbarko r.	26,3%	52,2%
Mažeikių r.	25,5%	67,5%
Šilutės r.	24,6%	27,3%
Švenčionių r.	24,5%	50,0%
Jonavos r.	22,7%	58,8%
Visagino m.	22,2%	16,3%
Klaipėdos r.	22,0%	55,6%
Vilniaus m.	21,8%	37,3%
Radviliškio r.	21,8%	27,8%
Kauno m.	21,4%	67,9%
Skuodo r.	20,7%	60,0%
Plungės r.	20,5%	42,1%
Panevėžio m.	19,4%	49,4%
Kėdainių r.	18,2%	50,0%
Trakų r.	16,6%	40,0%
Klaipėdos m.	16,1%	47,5%
Šiaulių m.	16,0%	24,7%
Marijampolės sav.	15,6%	46,5%
Kauno r.	15,2%	33,3%
Šakių r.	14,8%	44,4%
Prienų r.	14,6%	70,6%
Raseinių r.	13,6%	60,0%
Biržų r.	13,1%	50,0%
Telšių r.	10,9%	10,5%
Kelmės r.	10,6%	25,0%
Šilalės r.	6,5%	16,7%



m. = City/ Town
r. = District
sav. = Municipality

What Regions Produced Best Results in the state final examinations?

It is much more difficult to compare examination results between two regions (or towns, districts, municipalities) than between two graduates. Regions are different in size and are marked for different popularity of the selected examinations. Therefore, it is not correct to calculate and compare average examination results in a group of graduates, as in one region all graduates decided to take a particular examination, whereas in another region, only a few of them selected the same

examination. Of course, the average marks of those several graduates (who might be the best) will be higher than the average points for the whole group of graduates. So, what is the object of comparison? It is not the right thing to calculate only those graduates who achieved the best results (those who received more than 90 points), as the city of Vilnius will be a clear leader with nearly a fifth of the Lithuanian graduates learning and living in it.

In 1999, we proposed the following methodology for comparing results of the secondary education examinations in regions. Let's take the total number of graduates in each region that selected the state final examination (e.g. in mathematics) and let's estimate a tenth (10%) of this number. In Vilnius a tenth part accounts for 350, in Kaunas – for 250, and in the district of Sakiai – for only 28. Then let's estimate the number of graduates of this region who received more than 90 points for the examination, and let's compare this number with the tenth part. It can be assumed that all pupils with best knowledge in mathematics decided to take the state final examination in mathematics. Therefore, the percentage ratio between the total number of best results and the number of graduates comprising the one-tenth part indicates how good are the best pupils. This figure depends neither upon popularity of the examination nor the number of graduates who participated in it. This figure will not be affected even if many pupils fail in the examination. This figure, however, will reflect chances of the best pupils in the region to enter Lithuanian universities. If, however, even the best do not produce 'brilliant' results, it is high time to think things over.

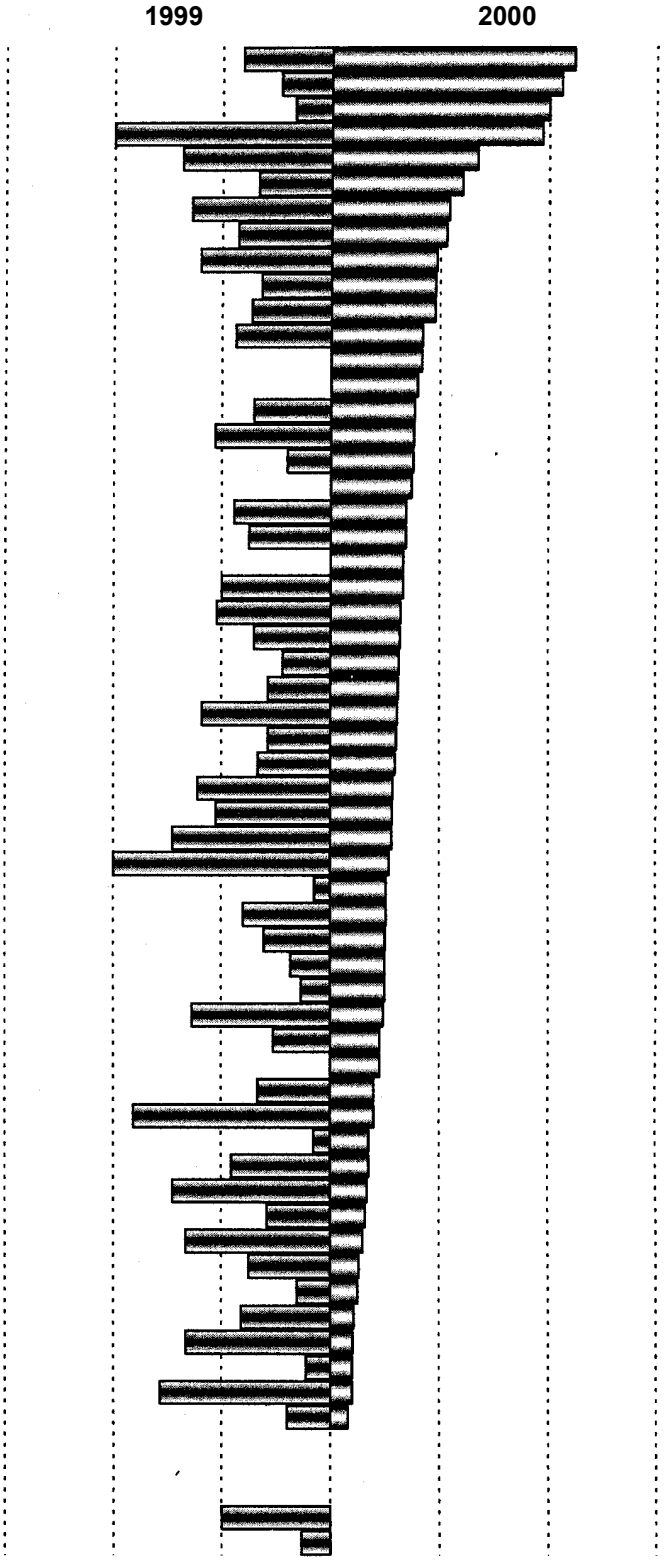
Using such regional comparison methods, we can re-estimate results of the state final examinations in history and mathematics in 1999 (convert marks from a ten-point to a hundred-point scale) and compare them with the examination results in 2000. It must be noted that there are slight changes in the administrative division of Lithuania – new municipalities of Rietavas, Elektrenai, Pagegiai, Kazlu Ruda, Kalvarija were established, the town of Marijampole was reformed into the municipality of Marijampole. This impedes comparison of the information from the last two years.

Diagrams 25 and 26 allow to conclude that there is no lasting stability in the regional results of the state final examinations in history and mathematics in 1999 and 2000. In both years graduates from Visaginas, Kaisiadoriai, Vilnius, Prienai produced very good results in the mathematics examination, and graduates from Taurage and Jonava were very good at the history examination. Nevertheless, many regions produced quite different examination results in both examination sessions. This fact can be explained by the changes in the procedures for taking the state final examinations – in 1999, a graduate without much risks could try to pass the state final examination held in April, and in case of failure, take an examination in the same subject at school level during the final examination session, held in May. In 2000, both secondary education examinations - State exam and school exam, - were held the same day. This required more carefulness in the selection of the examination and at the same time reduced the number of graduates who decided to take the state final examination.

Of course, a two-year period is a very short span to draw any conclusions. More information about regions is necessary, however, even such a comparison gives start to the monitoring of the education system.

*Diagram 25. Results of the state final examination in **history** in 1999 and 2000: the ratio (in per cent) between the number of graduates who received very good results (91 – 100 points) and the tenth part of all graduates in that region*

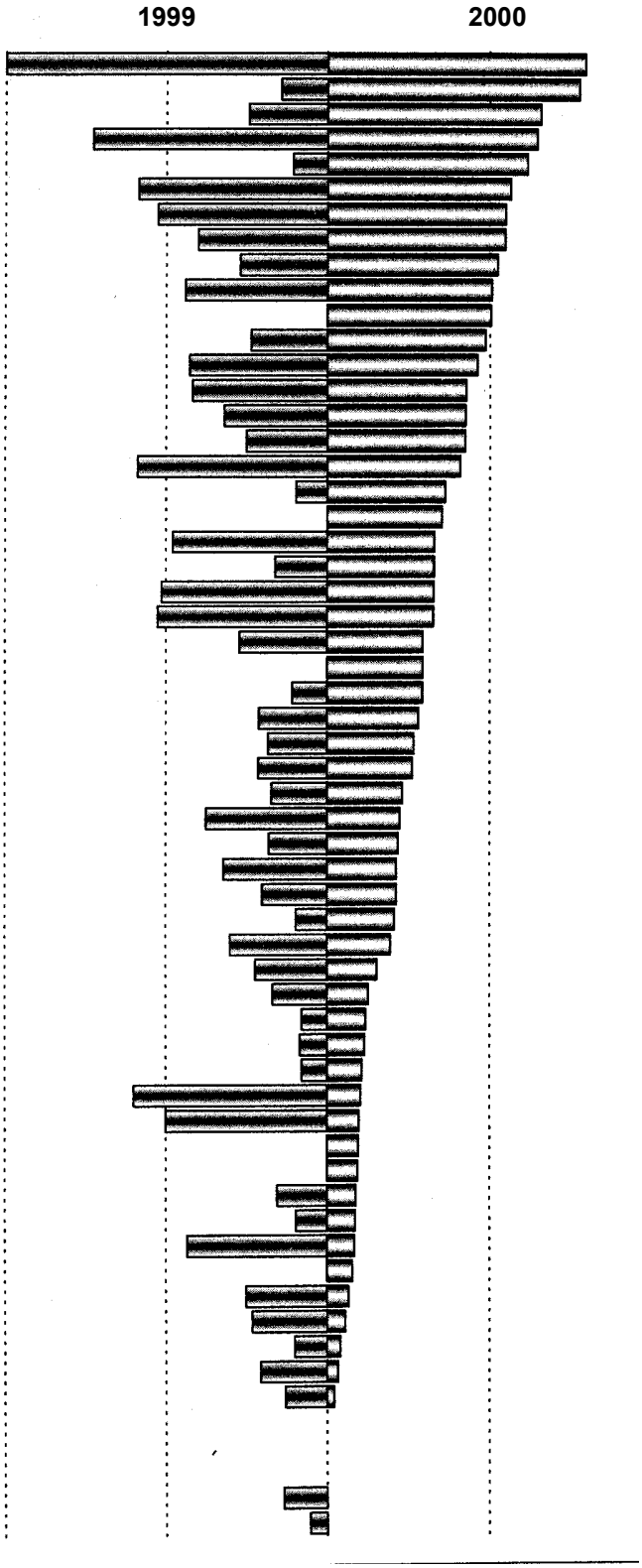
Year	1999	2000
Alytaus m.	40,7	111,7
Druskininkų sav.	23,1	106,0
Zarasų r.	16,7	100,0
Tauragės r.	100,0	97,0
Jonavos r.	68,4	67,0
Anykščių r.	33,3	60,0
Vilniaus m.	64,1	54,1
Šiaulių m.	42,6	52,9
Biržų r.	60,0	48,4
Šilutės r.	31,8	47,8
Palangos m.	36,4	47,6
Utenos r.	43,8	41,8
Rietavo sav.	***	41,7
Elektrėnų sav.	***	39,7
Ukmergės r.	35,3	38,5
Kauno m.	53,2	38,1
Molėtų r.	20,0	37,7
Plungės r.	0,0	37,0
Vilkaviškio r.	44,4	34,7
Kupiškio r.	37,5	34,5
Alytaus r.	0,0	33,3
Šakių r.	50,0	33,3
Klaipėdos m.	52,3	32,1
Akmenės r.	35,0	31,8
Telšių r.	21,9	31,4
Ignalinos r.	28,6	30,9
Kauno r.	59,1	30,8
Visagino m.	28,6	30,3
Šiaulių r.	33,3	29,7
Kretingos r.	61,1	28,6
Panevėžio m.	52,6	28,4
Klaipėdos r.	72,7	28,3
Varėnos r.	100,0	27,0
Kelmės r.	7,1	25,6
Šilalės r.	40,0	25,6
Kėdainių r.	30,4	25,2
Šalčininkų r.	18,2	25,1
Lazdijų r.	13,3	25,0
Marijampolės sav.	63,6	24,3
Švenčionių r.	26,3	22,7
Pagėgių sav.	***	22,7
Kaišiadorių r.	33,3	20,0
Raseinių r.	90,9	20,0
Joniškio r.	7,7	17,7
Skuodo r.	45,5	17,6
Radviliškio r.	72,7	16,9
Vilniaus r.	29,0	16,0
Pasvalio r.	66,7	14,9
Pakruojo r.	37,5	13,2
Rokiškio r.	15,4	12,6
Trakų r.	41,0	10,9
Jurbarko r.	66,7	10,3
Širvintų r.	11,1	10,0
Prienų r.	78,6	10,0
Mažeikių r.	20,0	8,0
Birštono m.	0,0	0,0
Kazlų Rūdos sav.	***	0,0
Kalvarijos sav.	***	0,0
Panevėžio r.	50,0	0,0
Marijampolės r.	13,3	***



NOTE. Data of 1999 about the municipality of Marijampole refers to the town of Marijampole

*Diagram 26. Results of the state final examination in **mathematics** in 1999 and 2000: the ratio (in per cent) between the number of graduates who received very good results (91 – 100 points) and the tenth part of all graduates in that region*

Year	1999	2000
Visagino m.	100,0	79,4
Plungės r.	14,3	77,6
Kretingos r.	24,2	65,7
Kaišiadorių r.	72,7	64,5
Kupiškio r.	10,5	61,5
Vilniaus m.	58,6	56,4
Prienų r.	52,6	54,8
Jurbarko r.	40,0	54,7
Utenos r.	26,9	52,3
Druskininkų sav.	44,0	50,5
Elektrėnų sav.	***	50,3
Zarasų r.	23,5	48,5
Kauno m.	42,6	46,1
Panevėžio m.	41,7	42,7
Šiaulių m.	31,8	42,5
Marijampolės sav.	25,0	42,4
Šiaulių r.	58,8	40,8
Pasvalio r.	9,5	36,4
Klaipėdos r.	0,0	35,3
Alytaus m.	47,9	33,1
Ukmergės r.	16,1	32,9
Klaipėdos m.	51,4	32,8
Tauragės r.	52,5	32,7
Kauno r.	27,1	29,4
Kazlų Rūdos sav.	***	29,4
Jonavos r.	10,7	29,3
Palangos m.	21,1	28,2
Joniškio r.	18,2	26,7
Vilkaviškio r.	21,2	26,2
Rokiškio r.	17,1	23,3
Biržų r.	37,5	22,5
Raseinių r.	17,9	22,0
Mažeikių r.	32,0	21,4
Molėtų r.	20,0	21,4
Radviliškio r.	9,5	20,8
Alytaus r.	30,0	19,6
Telšių r.	22,0	15,5
Šakių r.	16,7	12,8
Šilalės r.	7,7	12,0
Lazdijų r.	8,3	11,6
Švenčionių r.	7,7	10,8
Varėnos r.	60,0	10,3
Šalčininkų r.	50,0	9,9
Skuodo r.	0,0	9,8
Panevėžio r.	0,0	9,4
Širvintų r.	15,4	8,8
Kėdainių r.	9,5	8,7
Trakų r.	43,3	8,6
Pakruojo r.	0,0	7,8
Akmenės r.	25,0	6,6
Anykščių r.	23,1	5,6
Kelmės r.	10,0	4,0
Šilutės r.	20,5	3,3
Vilniaus r.	12,7	2,2
Kalvarijos sav.	***	0,0
Pagėgių sav.	***	0,0
Rietavo sav.	***	0,0
Ignalinos r.	13,3	0,0
Marijampolės r.	5,3	***



NOTE. Data of 1999 about the municipality of Marijampole refers to the town of Marijampole.

Regional results of the state final examinations in 2000 will be compared in a simpler way: we will present information about the regional share of graduates who selected a secondary education examination in a particular subject (on either State or school level), the share of graduates who selected the state final examination, and the regional share of graduates, who decided to take the state final examination and received very good results (76 – 100 points, regions are listed according to this index). Information presented in a graphical form is of complex character and it is difficult to estimate which region is the best one. However, this analysis is not aimed at classifying regions into either good or bad ones but at providing complete information about the results of the secondary education examinations.

Diagrams 27-31 do not specify regions where less than 10 graduates took the state final examination. Different fonts indicate those regions where only 10-20 graduates took the examination.

Less than 20 graduates selected the state final examination in the new municipalities of Rietavas and Kazlu Ruda (less than 10 graduates in the municipalities of Kalvarija and Pagegiai). A large number of graduates decided to take the history examination in the districts of Akmene, Svencioniai, Mazeikiai, Birstonas town. Alytus, Zarasai, Druskininkai are marked for good results in this examination. The history examination gained less popularity in Visaginas, and the district of Pasvalys (cf. diagram 27).

The town of Visaginas is distinguished for numerous selection of the secondary education examination in mathematics and good results in it. Less than 20 graduates took the state final examination in mathematics in the municipality of Rietavas (less than 10 graduates in the municipalities of Kazlu Ruda, Kalvarija and Pagegiai). This examination was sufficiently popular in all regions, a slightly lower number of graduates selected it in Silale and Ignalina (cf. diagram 28).

Examinations in nature sciences were not as popular as these in history or mathematics. The majority of pupils gave preference to the biology examination. The physics examination was a bit more popular than chemistry examination. Different regions have different results for these three examinations (cf. diagrams 29 – 31).

NOTE: The diagram specifies regions where less than 20 graduates took the state final examination in history.

*Diagram 27. Results of the state final examination in **history** in 2000: a share of graduates in the region who selected the history examinations (both – at State level and at school level, only at State level), and a share of graduates in the region who achieved very good results (76 – 100 points) in the state final examination in history among all the graduates who selected it*

	Selected a final examination %	Selected a state final examination %	Estimated at 76-100 points %
	%	%	%
Alytaus m.	64,8	27,8	53,8
Zarasų r.	75,9	24,8	52,8
Druskininkų sav.	46,0	26,8	44,3
Tauragės r.	49,4	26,3	37,5
Klaipėdos m.	55,3	17,2	30,6
Klaipėdos r.	57,0	28,5	30,2
Lazdijų r.	58,5	18,0	29,7
Jonavos r.	58,9	36,8	29,5
Šiaulių m.	57,8	26,9	28,3
Ukmergės r.	49,1	22,6	27,8
Skuodo r.	74,9	20,7	27,7
Kauno m.	58,0	20,1	26,6
Palangos m.	52,5	28,8	26,1
Vilniaus m.	67,6	35,6	26,1
Utenos r.	71,9	33,9	25,4
Kauno r.	48,6	21,4	24,4
Visagino m.	26,0	6,6	24,0
Molėtų r.	61,6	29,7	23,5
Šakių r.	41,7	24,0	23,2
Raseinių r.	54,3	23,6	23,1
Plungės r.	57,4	29,4	22,9
Šalčininkų r.	59,1	13,1	22,7
Alytaus r.	51,3	18,8	22,7
Vilkaviškio r.	48,7	20,0	22,5
Panevėžio m.	54,2	29,5	22,0
Pasvalio r.	36,2	17,3	21,9
Kėdainių r.	65,7	27,2	21,7
Švenčionių r.	75,9	20,7	20,8
Akmenės r.	83,5	41,0	20,8
Telšių r.	70,9	28,3	20,7
Šilutės r.	58,1	33,9	20,5
Biržų r.	58,2	33,3	19,7
Elektrėnų sav.	61,8	29,9	19,7
Kretingos r.	66,0	40,8	19,4
Joniškio r.	60,1	30,9	19,0
Trakų r.	72,1	22,2	18,8
Panevėžio r.	47,2	17,6	18,2
Anykščių r.	65,8	39,5	17,8
Prienų r.	56,2	30,3	16,7
Radviliškio r.	50,9	24,9	16,1
Kelmės r.	56,9	27,4	16,0
Rietavo sav.	*80,0*	*31,7*	*15,8*
Jurbarko r.	41,1	16,1	15,8
Kazlų Rūdos sav.	*70,6*	*25,5*	*15,4*
Širvintų r.	68,0	19,0	14,3
Šilalės r.	59,1	22,7	13,3
Ignalinos r.	56,1	27,2	12,8
Kaišiadorių r.	63,0	29,8	12,7
Marijampolės sav.	57,6	24,0	12,4
Varėnos r.	50,5	37,3	12,2
Vilniaus r.	57,1	15,0	11,0
Kupiškio r.	52,1	22,2	10,8
Mažeikių r.	75,4	29,4	9,5
Šiaulių r.	60,5	25,1	9,5
Rokiškio r.	50,8	21,7	8,8
Pakruojo r.	48,1	24,7	7,7
Birštono m.	75,6	53,3	4,2

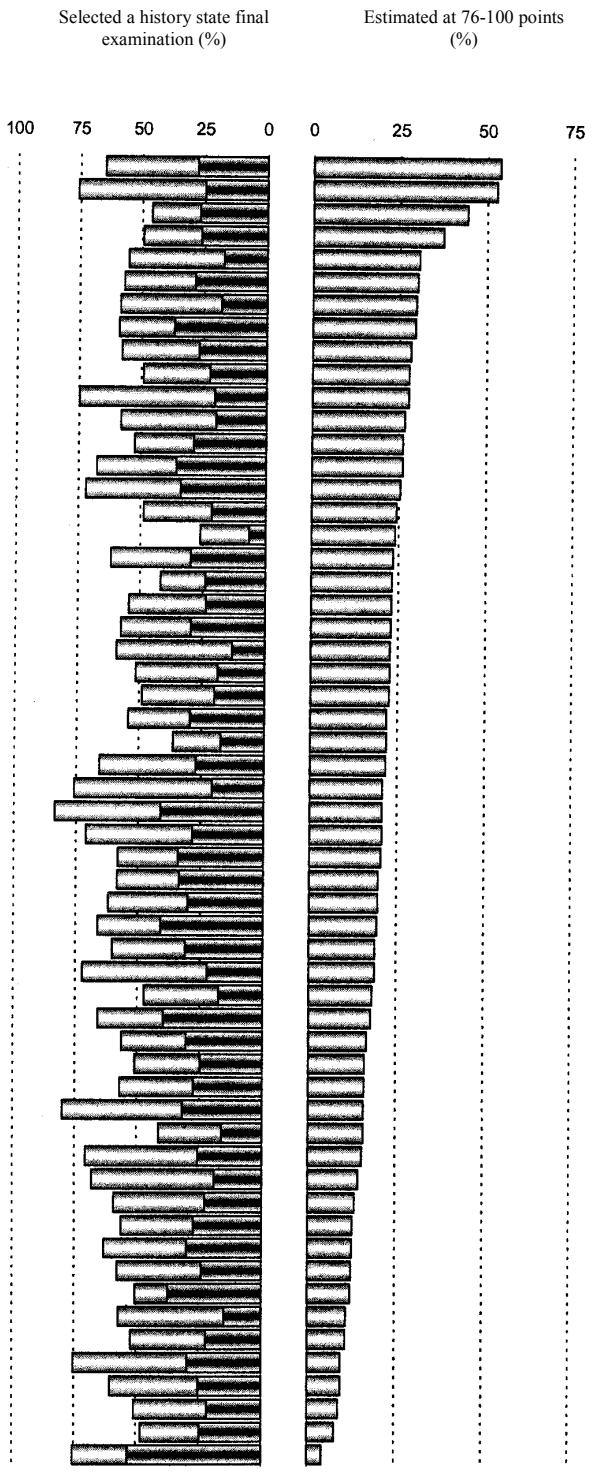


*Diagram 28. Results of the state final examination in **mathematics** in 2000: a share of graduates in the region who selected the mathematics examinations (both – at State level and at school level, only at State level), and a share of graduates in the region who achieved very good results (76 – 100 points) in the state final examination among all the graduates who selected it*

	Selected a final examination	Selected a state final examination	Estimated at 76-100 points
	%	%	%
Visagino m.	89,2	30,7	41,9
Plungės r.	82,3	37,6	35,8
Jurbarko r.	85,2	28,0	34,8
Kupiškio r.	77,8	24,0	32,5
Kauno m.	85,7	32,3	29,6
Klaipėdos m.	84,8	23,9	29,2
Klaipėdos r.	91,4	33,3	29,0
Šiaulių r.	88,0	35,3	28,8
Prienų r.	82,0	34,3	27,9
Mažeikių r.	84,0	28,8	27,8
Druskininkų sav.	84,5	35,4	27,6
Kaišiadorių r.	78,2	29,4	27,1
Utenos r.	84,4	31,5	26,8
Vilniaus m.	83,0	39,0	26,4
Palangos m.	88,8	33,1	26,4
Kauno r.	84,8	34,2	26,3
Alytaus m.	91,8	29,9	26,2
Molėtų r.	81,4	31,4	25,9
Elektrėnų sav.	87,7	41,7	25,9
Kretingos r.	80,4	35,5	25,5
Marijampolės sav.	82,7	29,9	25,1
Tauragės r.	82,3	29,0	24,7
Pasvalio r.	89,2	31,9	23,7
Panevėžio m.	84,1	38,0	23,5
Šiaulių m.	78,6	37,1	23,3
Rietavo sav.	*93,3*	*30,0*	*22,2*
Rokiškio r.	82,4	36,4	21,9
Alytaus r.	*87,2*	23,9	*21,4*
Telšių r.	78,5	19,2	20,0
Birštono m.	75,6	55,6	20,0
Radviliškio r.	82,3	28,3	18,2
Pakruojo r.	81,0	27,8	18,2
Vilkaviškio r.	85,9	29,6	18,1
Skuodo r.	90,3	12,3	17,9
Ukmergės r.	76,4	27,4	17,2
Zarasų r.	71,0	24,1	17,1
Jonavos r.	78,6	37,2	15,0
Raseinių r.	82,2	24,3	14,9
Kelmės r.	90,1	19,7	14,8
Šalčininkų r.	90,2	20,2	14,7
Šakių r.	81,6	21,9	14,3
Joniškio r.	79,8	31,9	13,3
Šilalės r.	63,3	17,4	13,0
Anykščių r.	78,1	34,2	12,8
Ignalinos r.	58,4	13,9	12,5
Švenčionių r.	80,2	21,6	12,0
Trakų r.	91,4	21,9	11,9
Šilutės r.	83,6	26,7	11,5
Biržų r.	83,6	41,3	11,4
Vilniaus r.	82,2	18,1	11,1
Lazdijų r.	83,9	24,9	9,8
Širvintų r.	76,9	21,8	9,4
Kėdainių r.	81,3	25,3	9,3
Varėnos r.	88,2	43,6	7,3
Akmenės r.	80,3	33,0	6,5
Panevėžio r.	84,8	30,4	2,6

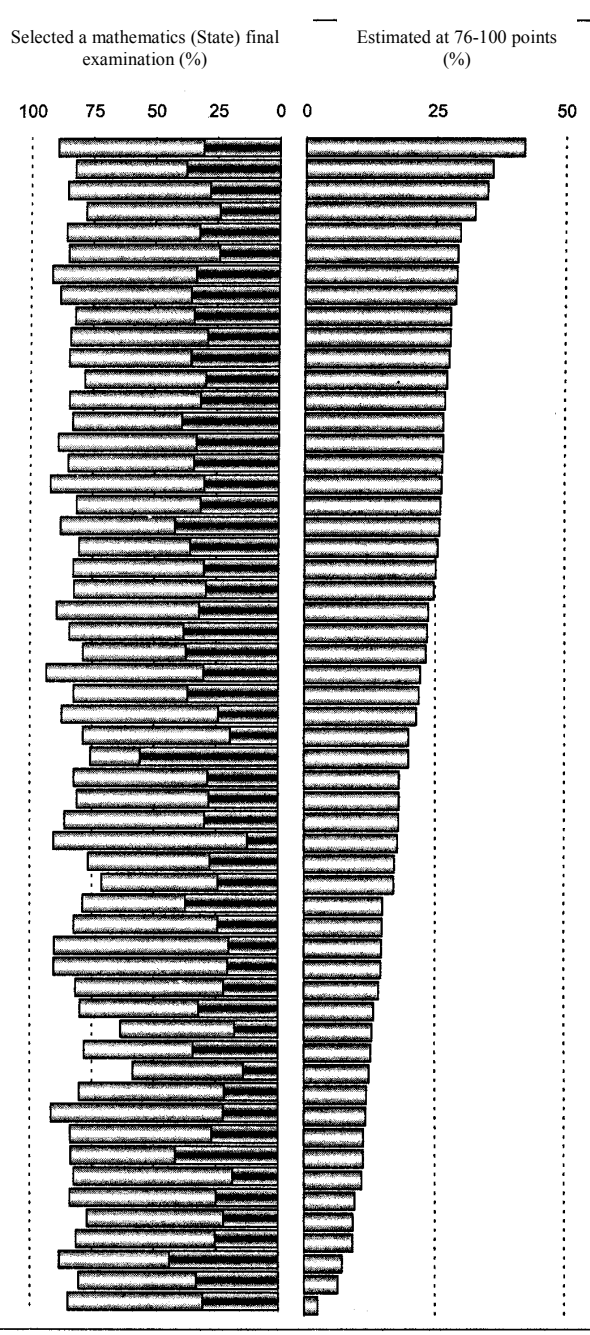


*Diagram 29. Results of the state final examination in **biology** in 2000: a share of graduates in the region who selected the biology examinations (both – at State level and at school level, only at State level), and a share of graduates in the region who achieved very good results (76 – 100 points) in the state final examination among all the graduates who selected it*

	Selected a final examination	Selected a state final examination	Estimated at 76-100 points
	%	%	%
Skuodo r.	*38,3*	*6,2*	*50,0*
Molėtų r.	*39,5*	*8,1*	*50,0*
Panevėžio m.	36,2	6,9	41,8
Utenos r.	29,1	4,8	41,7
Pakruojo r.	34,2	13,9	40,9
Kėdainių r.	42,1	7,1	40,0
Plungės r.	*37,2*	*5,7*	*37,5*
Šalčininkų r.	*60,2*	*4,2*	*35,7*
Raseinių r.	*45,7*	*5,4*	*33,3*
Vilniaus m.	25,3	4,9	32,1
Švenčionių r.	*33,2*	*6,9*	*31,3*
Trakų r.	*39,7*	*4,2*	*31,3*
Kelmės r.	*49,3*	*5,8*	*31,3*
Marijampolės sav.	33,6	6,3	30,6
Šiaulių r.	*47,3*	*6,0*	*30,0*
Klaipėdos m.	34,6	5,7	29,9
Prienų r.	*23,6*	*9,6*	*29,4*
Kaišiadorių r.	*23,9*	*5,9*	*28,6*
Vilkaviškio r.	*36,3*	*3,9*	*28,6*
Kauno m.	33,2	5,5	25,7
Kretingos r.	21,1	7,5	25,0
Ukmergės r.	23,9	6,3	25,0
Jurbarko r.	*41,1*	*5,1*	*25,0*
Radviliškio r.	34,6	9,4	24,2
Druskininkų sav.	*30,2*	*5,2*	*23,5*
Kupiškio r.	*31,7*	*7,8*	*23,1*
Telšių r.	33,2	5,3	23,1
Kauno r.	45,6	6,5	23,1
Joniškio r.	*27,7*	*9,6*	*22,2*
Pasvalio r.	*61,6*	*10,3*	*21,1*
Alytaus m.	23,2	5,6	20,8
Palangos m.	*24,4*	*6,3*	*20,0*
Tauragės r.	37,1	9,3	19,4
Šilutės r.	40,6	5,8	19,0
Šiaulių m.	34,2	7,3	17,7
Vilniaus r.	29,3	4,4	16,7
Jonavos r.	34,2	8,6	15,4
Rokiškio r.	*38,0*	*4,5*	*14,3*
Šilalės r.	53,8	11,0	13,8
Biržų r.	31,5	10,3	13,6
Šakių r.	47,2	8,0	13,0
Mažeikių r.	41,0	7,8	12,8
Anykščių r.	*27,2*	*7,0*	*12,5*
Varėnos r.	38,6	12,7	10,7
Visagino m.	*17,1*	*2,6*	*10,0*
Akmenės r.	*19,7*	*5,3*	*10,0*
Alytaus r.	*40,2*	*13,7*	*6,3*
Kazlų Rūdos sav.	*43,1*	*31,4*	*6,3*
Elektrėnų sav.	*15,2*	*8,8*	*5,6*

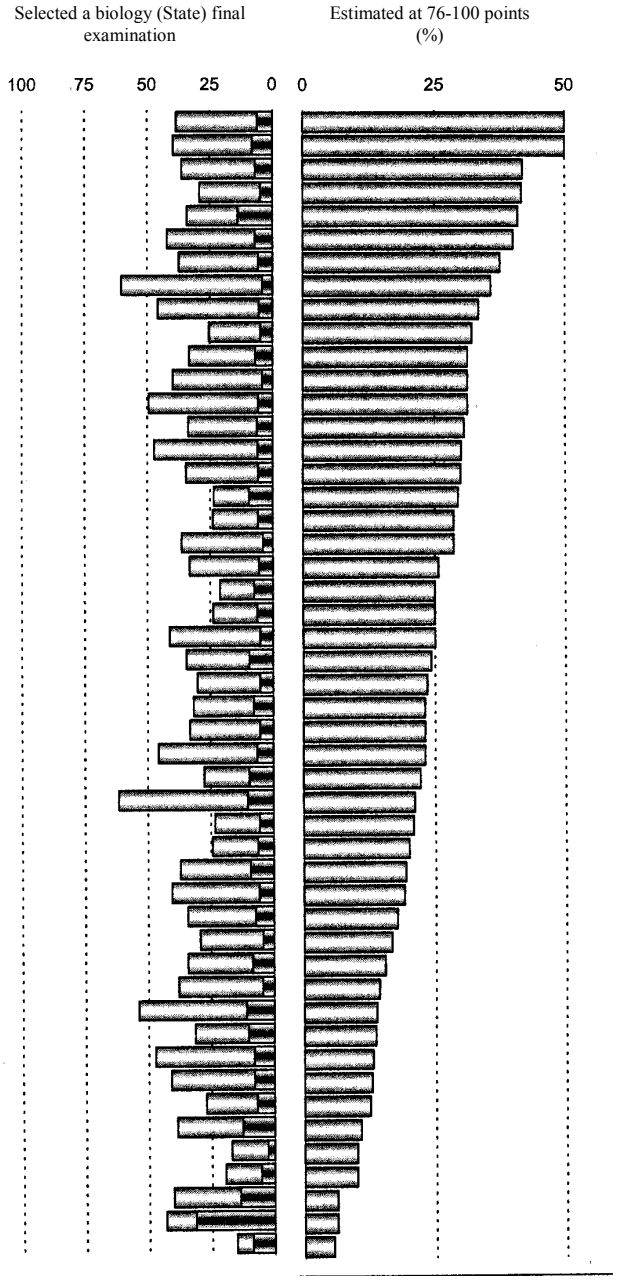
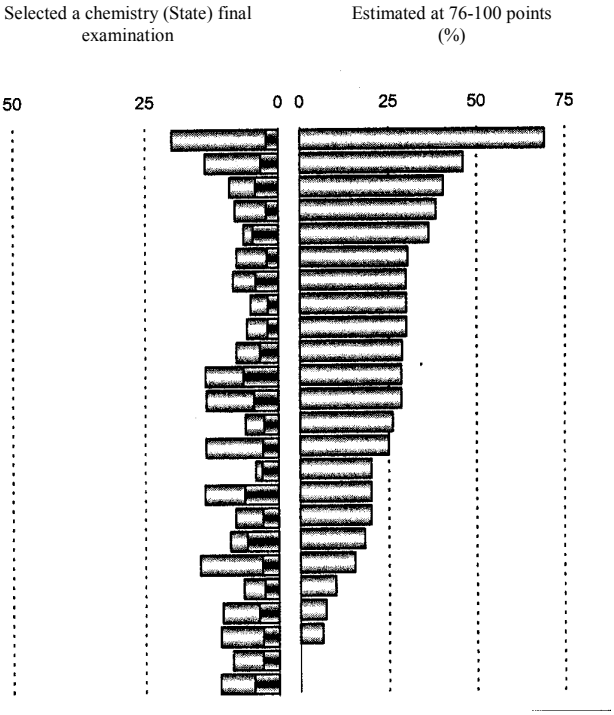


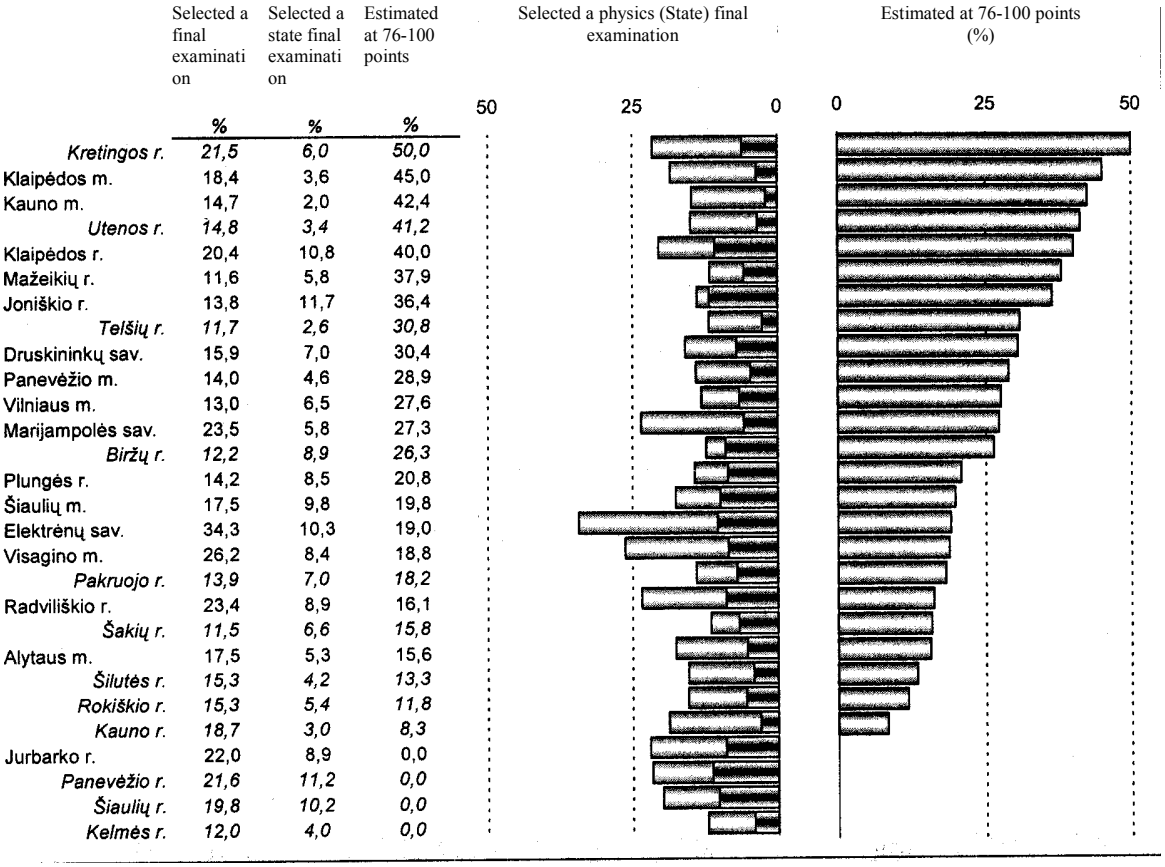
*Diagram 30. Results of the state final examination in **chemistry** in 2000: a share of graduates in the region who selected the chemistry examinations (both – at State level and at school level, only at State level), and a share of graduates in the region who achieved very good results (76 – 100 points) in the state final examination among all the graduates who selected it*

	Selected a final examination	Selected a state final examination	Estimated at 76-100 points
	%	%	%
Marijampolės sav.	*20,0*	*2,3*	*69,2*
Kauno r.	*13,7*	*3,2*	*46,2*
Panevėžio m.	9,1	4,3	40,5
Klaipėdos m.	8,1	2,3	38,5
Švenčionių r.	*6,5*	*4,7*	*36,4*
Šiaulių m.	7,8	2,1	30,4
Jurbarko r.	*8,5*	*4,2*	*30,0*
Utenos r.	*5,2*	*2,0*	*30,0*
Telšių r.	*5,9*	*2,0*	*30,0*
Vilniaus m.	7,8	3,5	28,8
Biržų r.	*13,6*	*6,6*	*28,6*
Jonavos r.	*13,5*	*4,6*	*28,6*
Alytaus m.	6,2	2,7	26,1
Kauno m.	13,5	2,9	25,0
Druskininkų sav.	*4,3*	*3,0*	*20,0*
Palangos m.	*13,8*	*6,3*	*20,0*
Šalčininkų r.	*8,0*	*3,0*	*20,0*
Joniškio r.	*9,0*	*5,9*	*18,2*
Kėdainių r.	*14,7*	*3,1*	*15,4*
Trakų r.	*6,5*	*2,6*	*10,0*
Visagino m.	*10,5*	*3,7*	*7,1*
Vilniaus r.	*10,8*	*2,9*	*6,3*
Mažeikių r.	*8,6*	*3,0*	*0,0*
Varėnos r.	*10,9*	*4,5*	*0,0*



m. = City/ Town
r. = District
sav. = Municipality

*Diagram 31. Results of the state final examination in **physics** in 2000: a share of graduates in the region who selected the physics examinations (both – at State level and at school level, only at State level), and a share of graduates in the region who achieved very good results (76 – 100 points) in the state final examination among all the graduates who selected it*



	%	%	%
Kretingos r.	*21,5*	*6,0*	*50,0*
Klaipėdos m.	18,4	3,6	45,0
Kauno m.	14,7	2,0	42,4
Utenos r.	*14,8*	*3,4*	*41,2*
Klaipėdos r.	20,4	10,8	40,0
Mažeikių r.	11,6	5,8	37,9
Joniškio r.	13,8	11,7	36,4
Telšių r.	*11,7*	*2,6*	*30,8*
Druskininkų sav.	15,9	7,0	30,4
Panevėžio m.	14,0	4,6	28,9
Vilniaus m.	13,0	6,5	27,6
Marijampolės sav.	23,5	5,8	27,3
Biržų r.	*12,2*	*8,9*	*26,3*
Plungės r.	14,2	8,5	20,8
Šiaulių m.	17,5	9,8	19,8
Elektrėnų sav.	34,3	10,3	19,0
Visagino m.	26,2	8,4	18,8
Pakruojo r.	*13,9*	*7,0*	*18,2*
Radviliškio r.	23,4	8,9	16,1
Šakių r.	*11,5*	*6,6*	*15,8*
Alytaus m.	17,5	5,3	15,6
Šilutės r.	*15,3*	*4,2*	*13,3*
Rokiškio r.	*15,3*	*5,4*	*11,8*
Kauno r.	*18,7*	*3,0*	*8,3*
Jurbarko r.	22,0	8,9	0,0
Panevėžio r.	*21,6*	*11,2*	*0,0*
Šiaulių r.	*19,8*	*10,2*	*0,0*
Kelmės r.	*12,0*	*4,0*	*0,0*

m. = City/ Town
r. = District
sav. = Municipality

WHAT FACTORS INFLUENCE RESULTS OF THE SECONDARY EDUCATION EXAMINATIONS?

METHOD

One of the simplest statistical characteristics, which allows to assess mathematically differences among groups, is coefficient η^2used in a single-factor dispersion analysis, and equalling the ratio SST/SSB. The meaning of the coefficient can be illustrated by the following example. Let's analyse groups of pupils, combined so that pupils in one group belong to the same school. Let's assume that coefficient η^2 of the test which was taken by pupils from different schools equals 0.2. This means that 20% of differences in test results can be explained by differences in schools. i.e. that different results depend on **the group factor** (on a pupil's belonging to a group, defined by this factor). The remaining share of 80 % depends on a pupil and his/her capabilities (**personal factor**). Very low values of coefficient η^2 would indicate that all schools are similar in pupils who attend them, i.e. that there are very bright and not very bright schoolchildren, and that pupils are not differentiated according to their capabilities. The more differentiated the education system is (either officially - determined by the type of school- or non-officially, when pupils select the "prestigious" school), the higher the value of this coefficient (in terms of a group of pupils, i.e. a school). Education specialists from abroad most frequently observe the changes in the diversity of pupils in different stages of education, investigate and monitor the level of school differentiation. Politicians are frequently interested whether there are not any inappropriate differences between regional, ethnical, etc. groups. Value 0.30 of the coefficient η^2 is considered to be a marginal one, if this value is exceeded, it is possible to conclude that major differences among groups really exist. The only thing is to decide whether this results from the educational policy, (either differentiation of educational system or internal structure of a school), or from discriminating processes of specific groups.

RESULTS

Assessment of examinations depends on a number of factors, and most importantly, on a graduate's knowledge and capabilities (this is what organizers of exams strongly believe in). However, statistical analysis of examination results provides only indirect proof of the influence of this factor in analysing other factors with a potential impact upon the examination results. Most frequently analysis is focused on how the group a pupil belongs to, can affect results of the examinations, or to put it simpler, to what extent (indicated in numeric value, if applicable) the group factor influences pupil's examination results. There are a lot of aspects in the education system which can be used in grouping pupils. Results of the secondary education examinations in 1999 were analysed on the basis of groups defined by the following factors:

- Sex factor (female graduates - male graduates)
- Regional factor (more than 50 municipal territories)
- A school factor (about 600 schools)

Results of the state final examinations in 2000 were analysed considering groups of graduates defined by the above-mentioned factors and three additional factors:

- Type of school (comprehensive schools – gymnasiums)
- School language at school (Lithuanian – Russian – Polish)

- Size of a school (very large – large – medium – small – very small).

Under such classification, different groups will vary in number – only a couple of groups defined by the sex factor or type of school, three groups defined by the school language factor, and hundreds of schools defined by the school size factor. Nevertheless, in all cases it is possible to estimate (using the above-specified methodology) the influence of each group on the examination results. In analysing the school factor, only those schools, where at least 5 graduates took the state final examination, were taken into consideration. This allowed to ignore influence of a separate graduate in a small school (in particular, if s/he was the only one in that school who took the state final examination) on the general examination results.

What are the conclusions after summarizing results of the state final examinations in 2000? Numeric values of the coefficient, reflecting the extent of dependency of the mark for the state final examination on the group factor, are listed in Table 4 (information from 1999 is presented as a comparison data).

Table 4. The influence of the group factor on the results of the state final examinations. Comparison of examination results by subject in 1999 and 2000.

	History		Mathematics		Biology	Chemistry	Physics
Factor/year	1999	2000	1999	2000	2000	2000	2000
Sex	0.01	0.01	0.00	0.00	0.00	0.02	0.00
Region	0.04	0.06	0.07	0.04	0.07	0.09	0.09
School	**0.30**	**0.26**	**0.34**	**0.25**	**0.41**	**0.42**	**0.39**
Type of school	***	0.02	***	0.04	0.03	0.03	0.03
School language	***	0.01	***	0.00	0.00	0.02	0.00
Size of school	***	0.02	***	0.02	0.02	0.02	0.01

How can this information be interpreted? The influence of four factors (sex, type of school, school language and size of school) is not noticeable on the results of the state final examinations. Graduates are not discriminated on the basis of these factors. Low values of the coefficient $\eta^2$of the regional factor can be explained by the difference between graduates (and their social-economic environment) in cities of Lithuania (Vilnius, Kaunas, Klaipeda, etc.) and other regions of Lithuania.

The school factor has a larger influence on the examination results. Schools and teachers differ from place to place, but the influence of the school factor, if the network of various schools is not broad, poses serious problems in the ensuring equal opportunities to receive education. In comparing values of coefficient $\eta^2$of this factor in the state final examinations in history and mathematics in 1999 and 2000, it is evident that these values are decreasing. In 2000, the school factor had much more influence on the results of examinations in nature sciences rather than on results on the examinations in history or mathematics. Differences between 1999 and 2000 can be explained by the changes in the procedure for taking the state final examinations – differently from 1999, examinations at the State level and at the school level were held the same day. Fewer graduates took these examinations since it was necessary to consider more carefully which examination to select. To explain differences between examinations in nature sciences and history/mathematics, more information is necessary. One reason for that can be a different number of graduates who decided to take these examinations. Examinations in nature sciences were not very popular. Schools where 5 or more graduates selected these examinations are not very numerous; such schools are also marked for their internal differences (mostly determined by the personality of a teacher and his/her

professional efficiency). Thus, the current task is to identify and estimate present differences. In a few year period having obtained a larger amount of information available for analysis, it would be possible to consider and explain diversity of the Lithuanian schools in greater detail.

Annex

STANDPOINT OF THE LITHUANIAN POLITICAL PARTIES WITH RESPECT TO THE CONCEPT OF EQUAL OPPORTUNITIES

The problem of equal opportunities is among most important issues in the current education system. This problem has been in the focus of the global community for a number of decades. Methods for ensuring equal opportunities, as well as the content of this concept have been changing over time. The Soviet system maintained that all people had equal opportunities in getting education, although even then it was acknowledged (non-officially) that the principle of equal opportunities lacks consistency in its implementation.

After re-establishment of independence of Lithuania the educational system was exposed to reforms and democratic changes, and the problem of equal opportunities started to be seen in the new light. With the differentiation of the society, its individuals started to differentiate themselves according to the availability of quality education. The problem of equal opportunities became a part of a wider social context, and inevitable had to get into the focus of education specialists and politicians.

This short analysis is aimed at analysing how the problem of equal opportunities fits into educational programmes of different political parties. We will concentrate on the educational chapters in pre-election programmes of those political parties, which have their delegates in the new Parliament, elected in autumn of 2000. Major findings of the analysis are briefly presented further on.

The problem of equal of opportunities is addressed most seriously in the pre-election programme of the ***Lithuanian Conservative Party****, which says that 'equal opportunities enable all citizens of Lithuania find a place in the society' To implement this statement, the Conservatives promise to:*

- *Ensure equal opportunities on the starting stage of learning;*
- *Improve social environment in the learning process;*
- *Increase variety of educational institutions, educational programmes and methods;*
- *Improve cohesion and relations between different types, levels and components of the education system, which will ensure full availability of further studies*

The programme of the ***Farmers' Party*** *also contains the concept of equal opportunities, but it deals with only one aspect of equal opportunities – ensuring equal opportunities for children in urban and rural territories.*

The programme of the ***Centre Union*** *also includes the task to ensure equal opportunities for children in rural and urban territories in getting appropriate education. This party would also like to provide equal opportunities for everyone who wants to engage in studies, irrespective of their social standing, and to provide all children with equal start opportunities.*

In its programme ***The Coalition of Social Democrats*** *states that 'the increasing social disproportion in the society reduces opportunities for the poor, especially young people in rural areas, to obtain education', and that the 'trend is towards establishing elite schools and schools for failures'. However, in specifying major trends of the education policy, the coalition of social democrats does not set a task of ensuring equal opportunities. The reference is made only to making education available to all children and young people, but that does not necessarily mean creation of equal opportunities.*

The ***Liberal Party*** *declares the necessity to ensure equal opportunities for companies in a public and private sectors rather than in the education system.*

The programme of the ***New Union*** *does not include the problem of equal opportunities among important issues of the education system.*

Although neither the Liberal Party, nor The New Union included the issue of equal opportunities in their pre-election programmes, this problem was enlisted into the ***Government programme drafted by the ruling coalition****. The education part of the Programme refers to ensuring equal opportunities for a successful start at school, equal treatment of pupils in towns and rural areas in obtaining the appropriate education. These statements in the provisions of the educational policy leads to the assumption that in the future the problem of equal opportunities will be properly addressed by politicians and highest education officials.*

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